

# On modeling the relative fitness of storage

## (model appendices)

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*A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy*

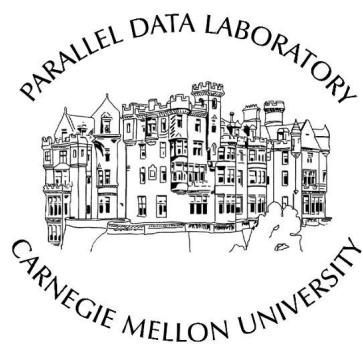
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## Appendix A

### FitnessDirect models

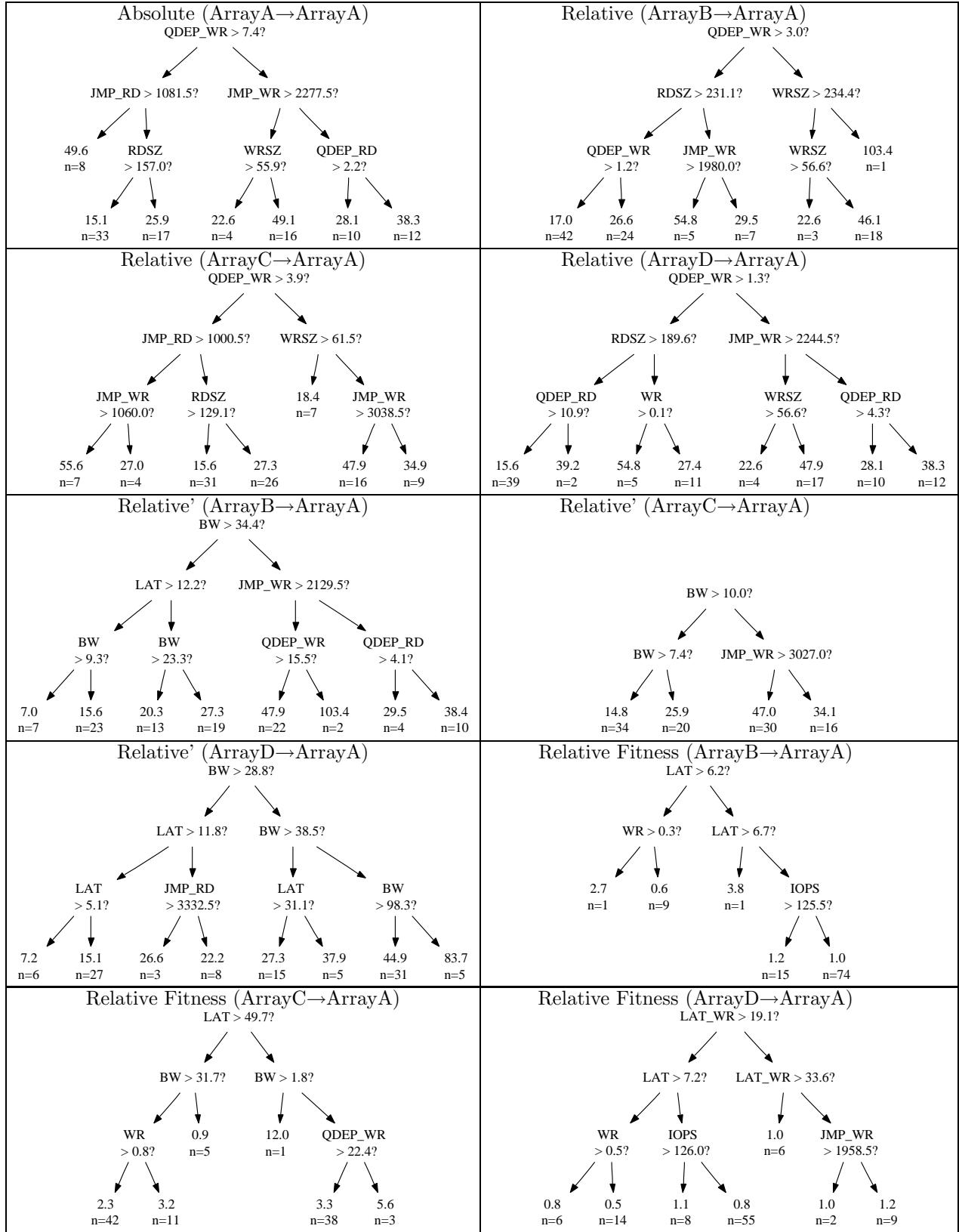


Table A.1: Bandwidth models of ArrayA.

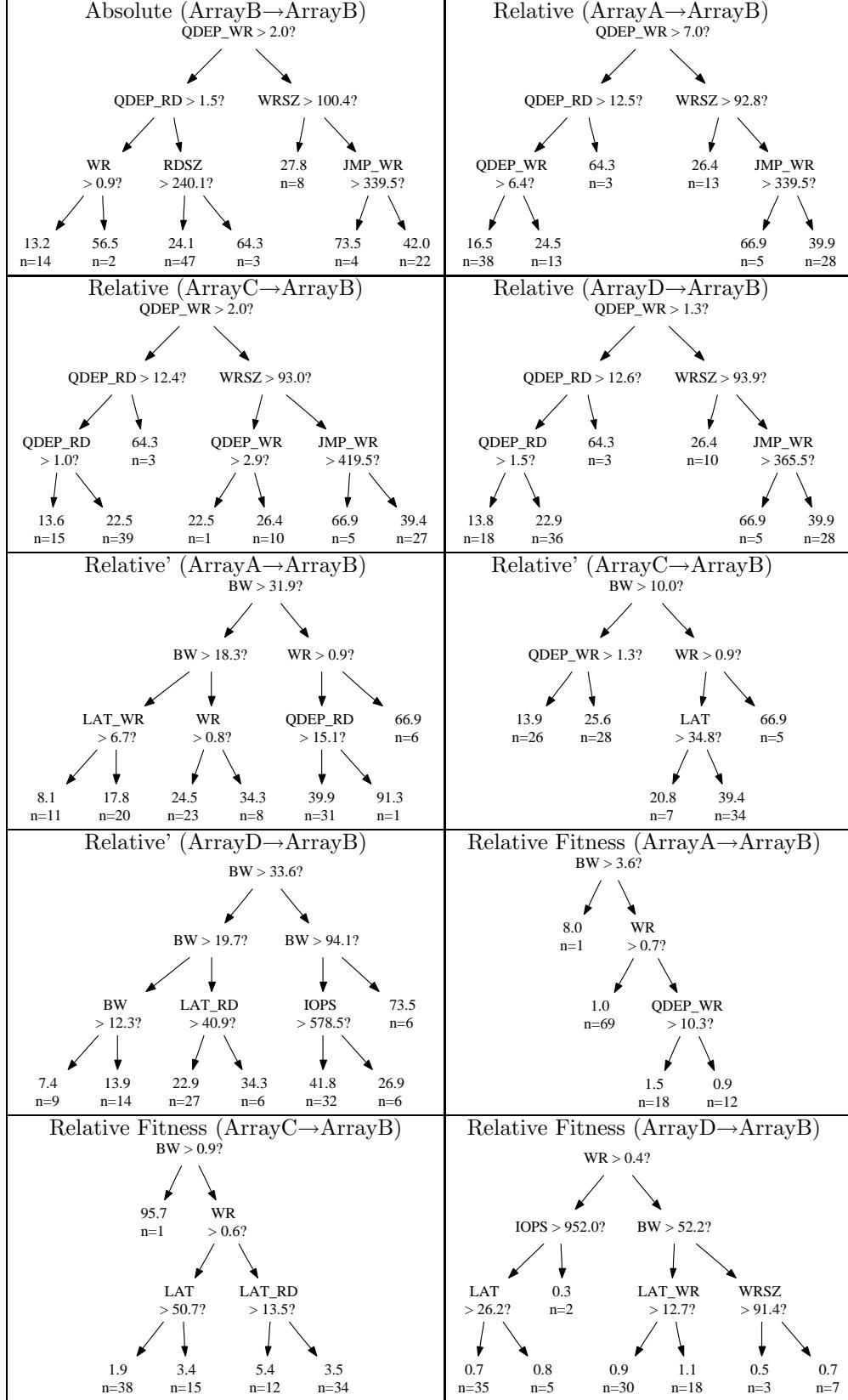


Table A.2: Bandwidth models of ArrayB.

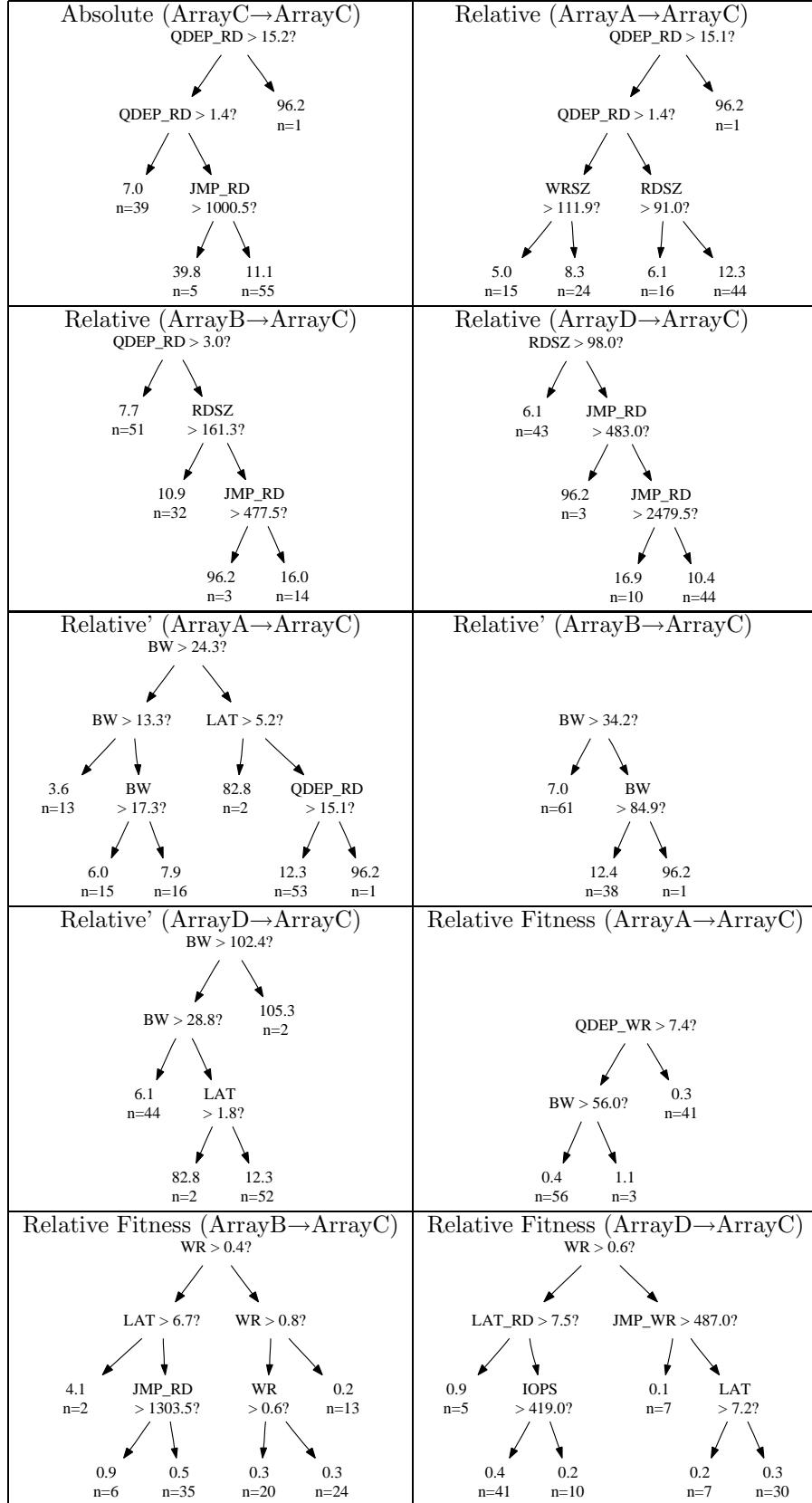


Table A.3: Bandwidth models of ArrayC.

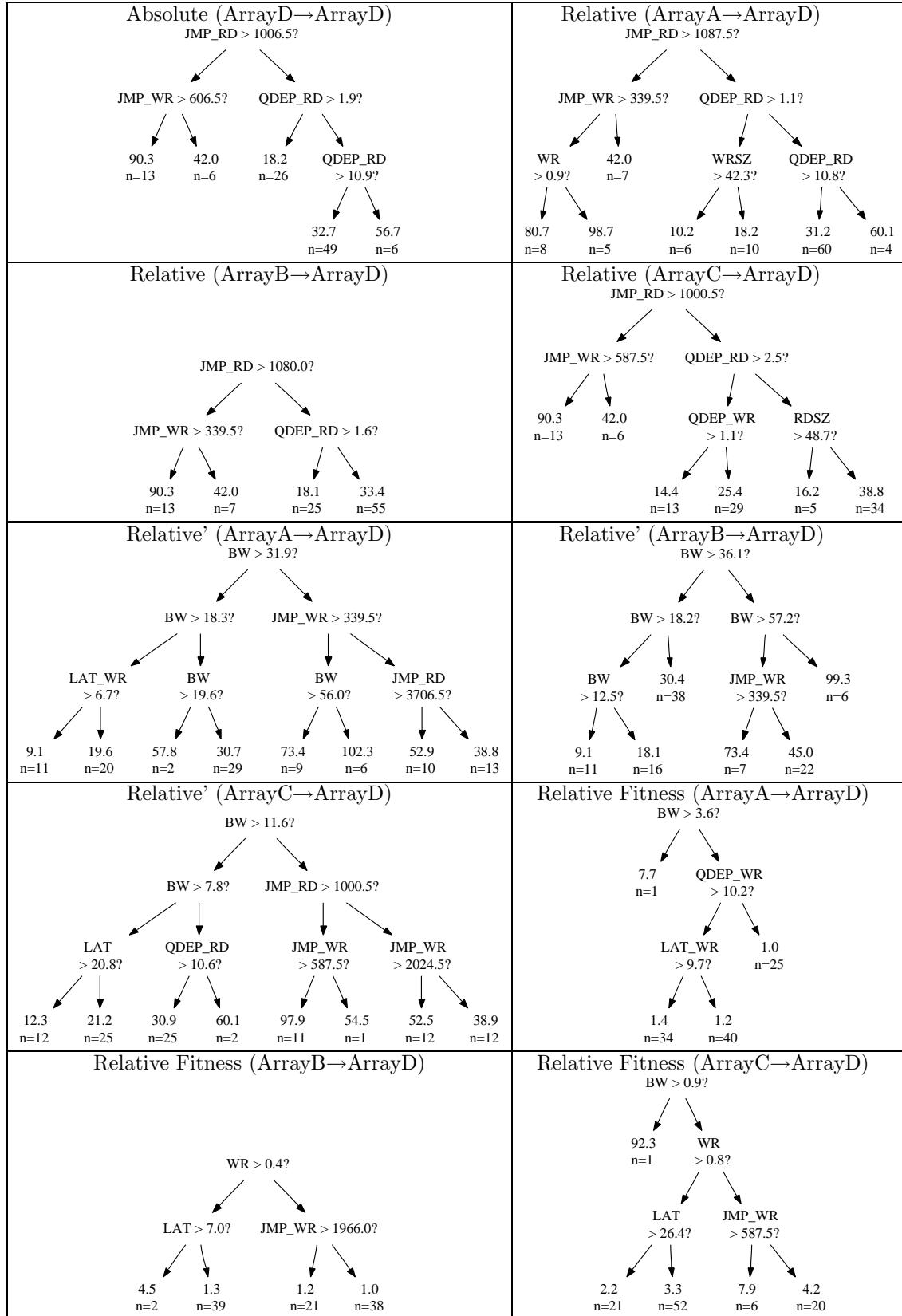


Table A.4: Bandwidth models of ArrayD.

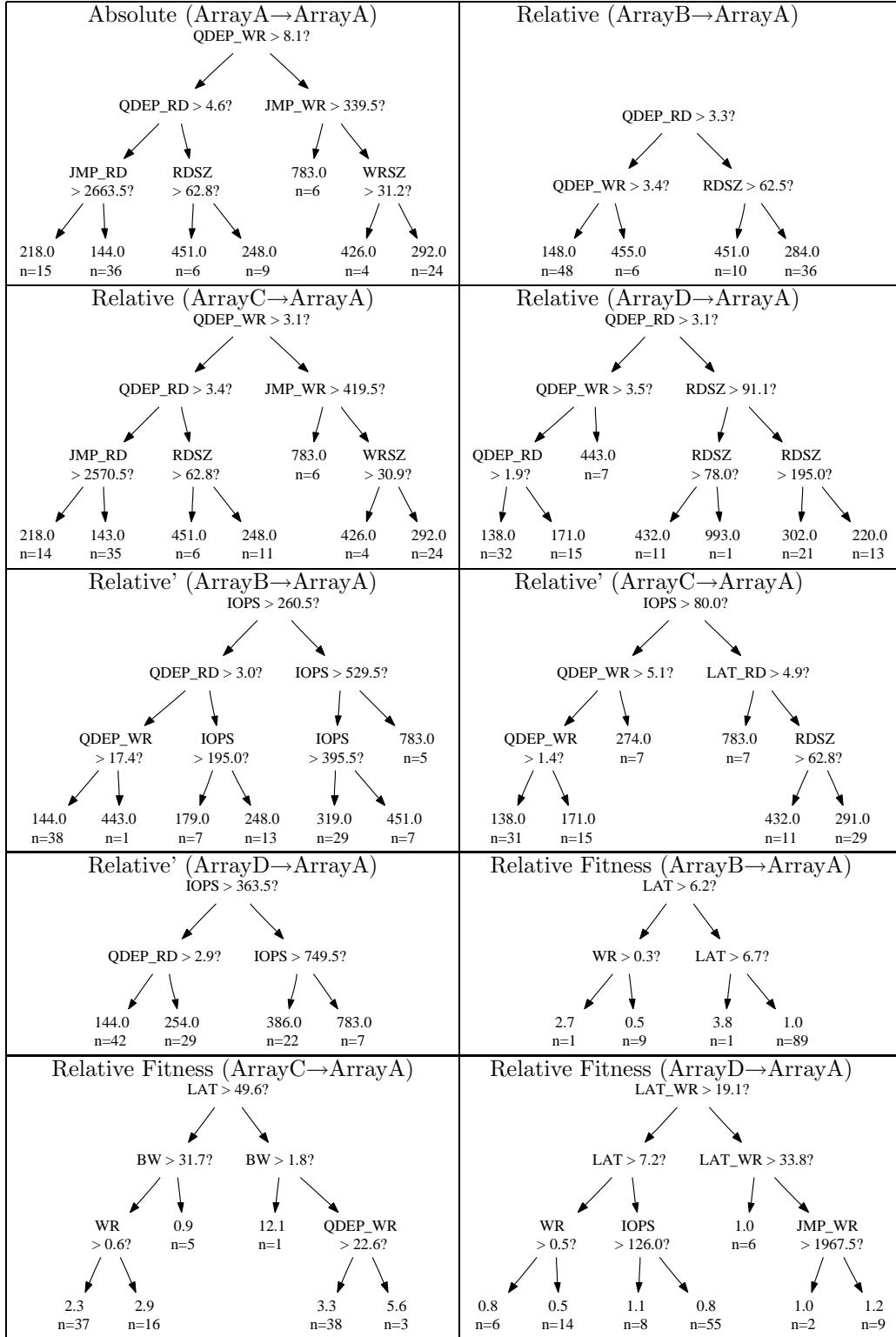


Table A.5: Throughput models of ArrayA.

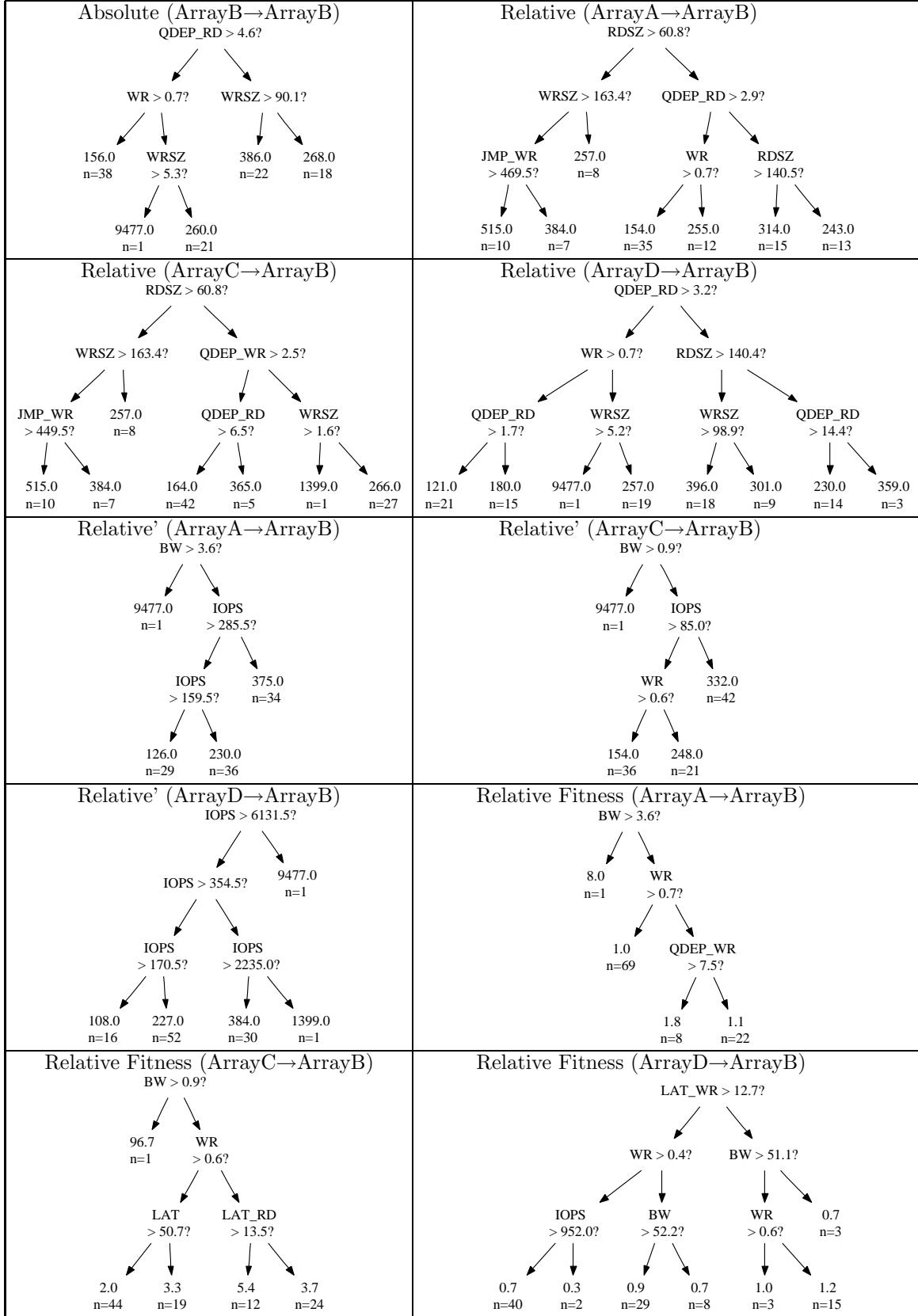


Table A.6: Throughput models of ArrayB.

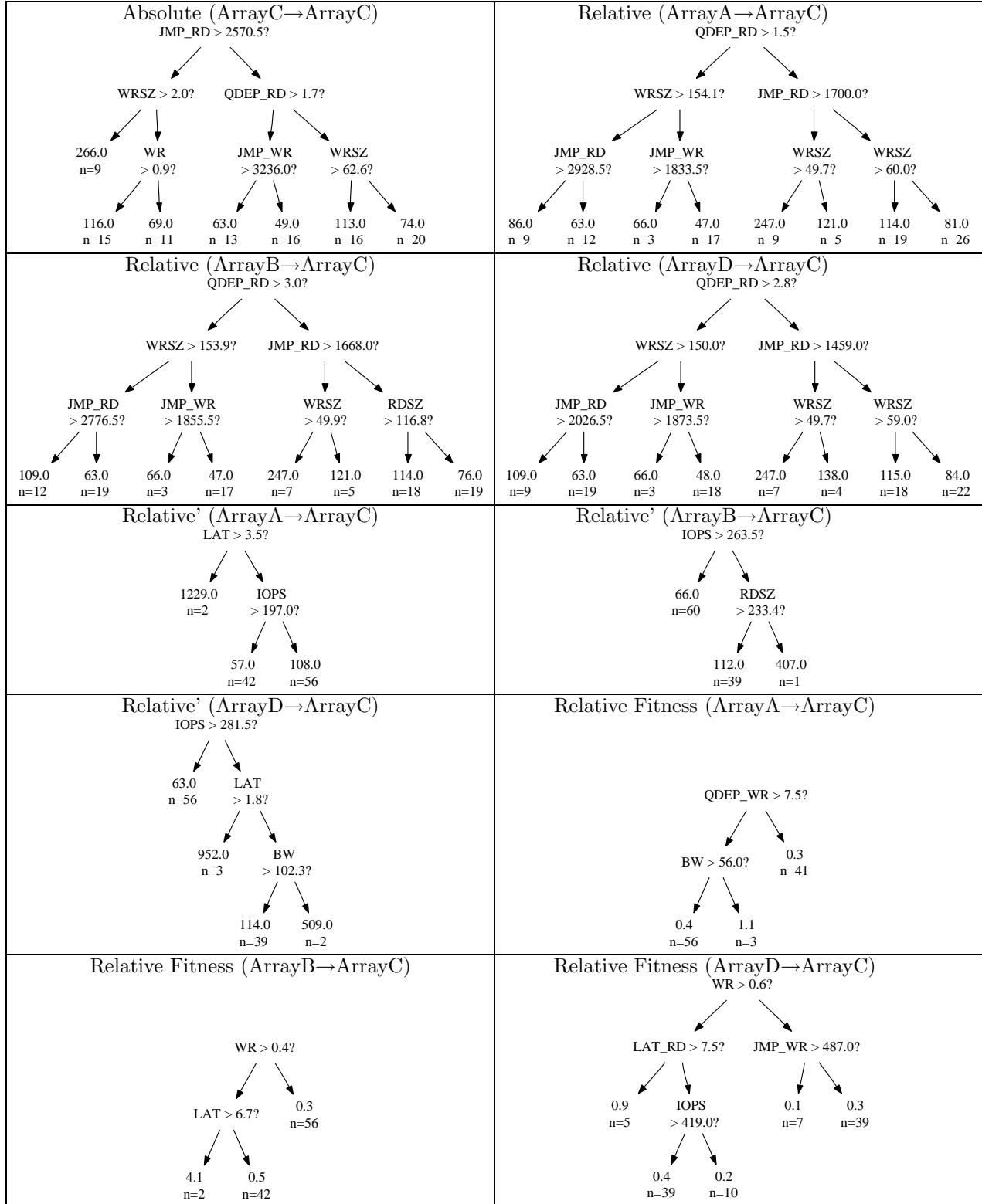


Table A.7: Throughput models of ArrayC.

Absolute (ArrayD→ArrayD)	Relative (ArrayA→ArrayD) JMP_WR > 1698.0?
JMP_WR > 1321.0? ↓ 449.0 n=36    227.0 n=64	RDSZ > 62.0? ↓ 633.0 n=15    QDEP_RD > 1.0? ↓ 108.0 n=3    387.0 n=21 ↓ 219.0 n=61
Relative (ArrayB→ArrayD) JMP_WR > 1676.5? ↓ RDSZ > 62.0?    219.0 n=61 ↓ 633.0 n=15    QDEP_RD > 1.2? ↓ 108.0 n=3    387.0 n=21 ↓ 219.0 n=61	Relative (ArrayC→ArrayD) JMP_WR > 1698.0? ↓ RDSZ > 62.0? ↓ 633.0 n=15    QDEP_RD > 1.0? ↓ 108.0 n=3    387.0 n=21 ↓ 219.0 n=61
Relative' (ArrayA→ArrayD) BW > 3.6? ↓ 9133.0 n=1    IOPS > 340.0? ↓ 230.0 n=78    IOPS > 669.5? ↓ 502.0 n=16    1237.0 n=5 ↓ 215.0 n=64    449.0 n=35	Relative' (ArrayB→ArrayD) IOPS > 5438.0? ↓ IOPS > 309.0?    9133.0 n=1 ↓ IOPS > 182.0?    IOPS > 996.5? ↓ 168.0 n=28    263.0 n=42    470.0 n=28    3130.0 n=1 ↓ 230.0 n=78    1237.0 n=5
Relative' (ArrayC→ArrayD) BW > 0.9? ↓ 9133.0 n=1    IOPS > 95.5? ↓ 215.0 n=64    449.0 n=35	Relative Fitness (ArrayA→ArrayD) BW > 3.6? ↓ 7.7 n=1    QDEP_WR > 10.3? ↓ LAT_WR > 9.7?    1.0 n=24 ↓ 1.4 n=34    1.2 n=41
Relative Fitness (ArrayB→ArrayD) WR > 0.4? ↓ LAT > 6.7?    JMP_WR > 825.5? ↓ 4.5 n=2    1.5 n=8    LAT_RD > 113.8? ↓ 1.1 n=8    1.4 n=31    1.0 n=44    0.9 n=7	Relative Fitness (ArrayC→ArrayD) BW > 0.9? ↓ 93.2 n=1    WR > 0.8? ↓ LAT > 26.4?    JMP_WR > 587.5? ↓ 2.2 n=21    3.3 n=52    8.0 n=6    4.2 n=20

Table A.8: Throughput models of ArrayD.

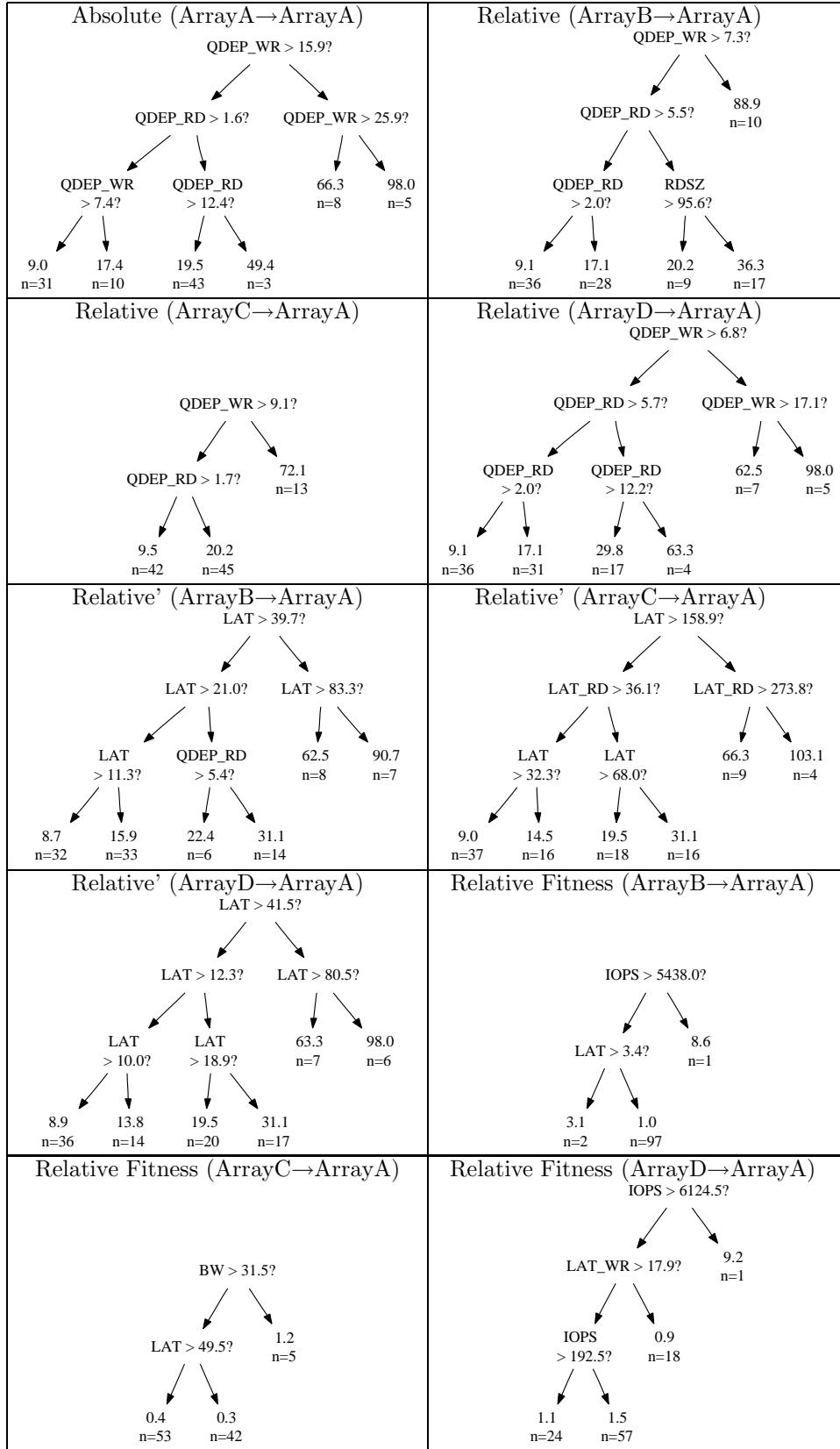


Table A.9: Latency models of ArrayA.

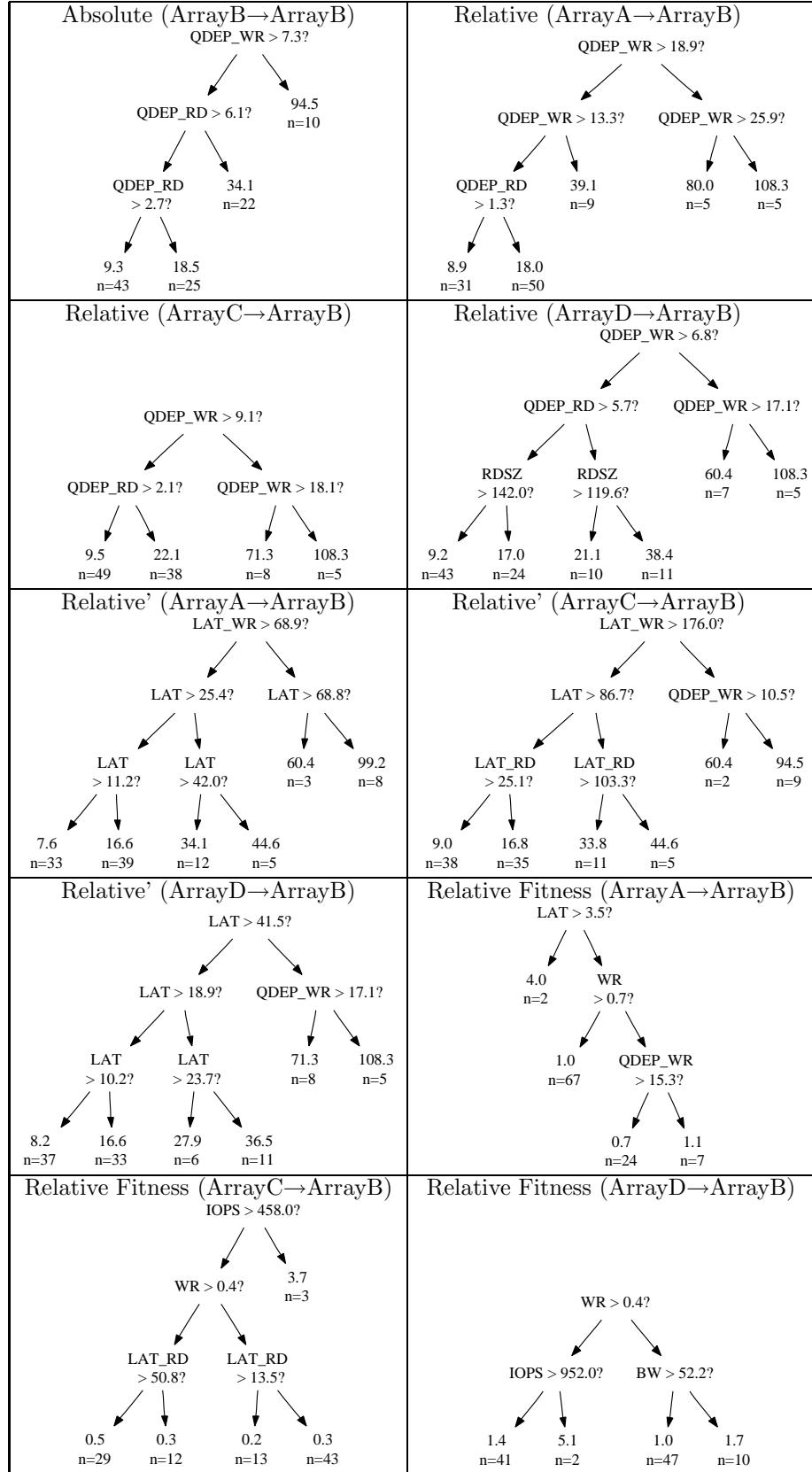


Table A.10: Latency models of ArrayB.

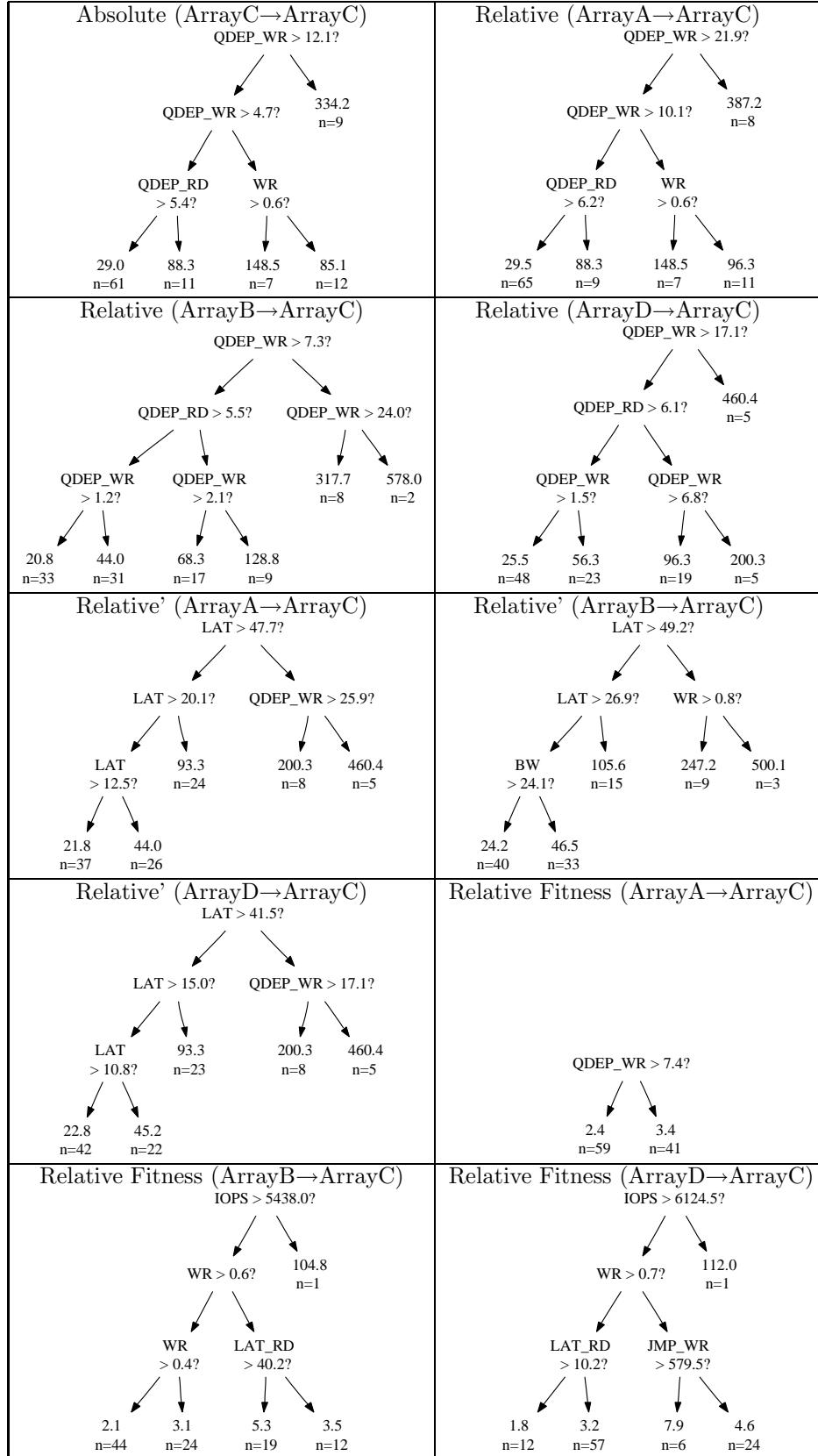


Table A.11: Latency models of ArrayC.

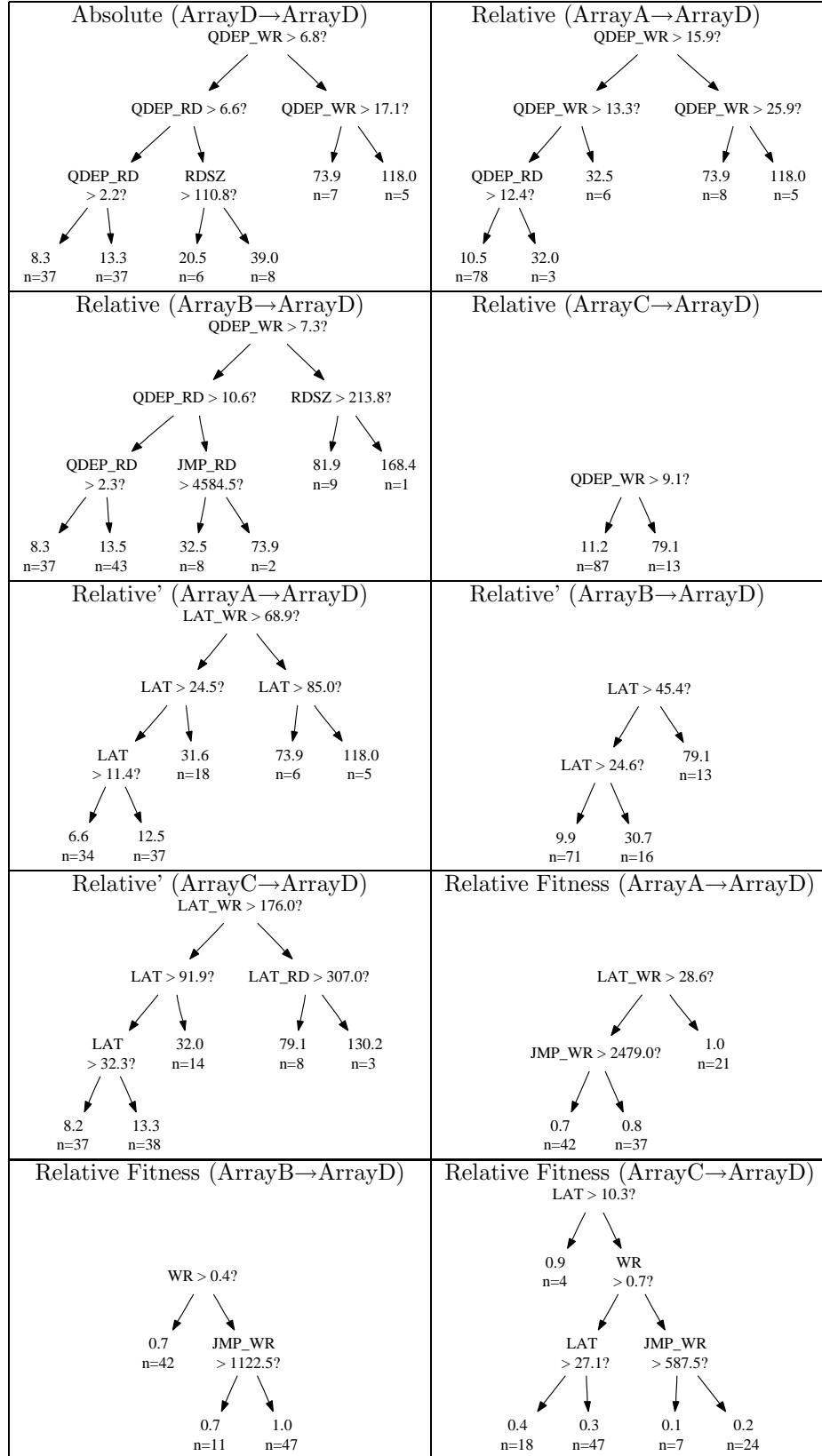


Table A.12: Latency models of ArrayD.



## **Appendix B**

### **FitnessBuffered models**

Absolute (ArrayA→ArrayA) JMP_RD > 292.5?	Relative (ArrayB→ArrayA) JMP_RD > 308.5?
<pre> graph TD     A["JMP_RD &gt; 292.5?"] --&gt; B["53.3 n=15"]     B --&gt; C["QDEP_RD &gt; 7.2? 18.8 n=62"]     C --&gt; D["34.4 n=23"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 308.5?"] --&gt; B["53.3 n=15"]     B --&gt; C["QDEP_RD &gt; 7.5? 18.8 n=62"]     C --&gt; D["34.4 n=23"]   </pre>
Relative (ArrayC→ArrayA) JMP_RD > 320.5?	Relative (ArrayD→ArrayA) JMP_RD > 291.5?
<pre> graph TD     A["JMP_RD &gt; 320.5?"] --&gt; B["53.3 n=15"]     B --&gt; C["QDEP_RD &gt; 7.1? JMP_WR &gt; 138.5? 34.4 n=23"]     C --&gt; D["16.0 n=34"]     C --&gt; E["23.4 n=28"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 291.5?"] --&gt; B["WR &gt; 0.8? QDEP_RD &gt; 7.4? QDEP_RD &gt; 8.2? 79.8 n=4"]     B --&gt; C["47.4 n=9"]     B --&gt; D["65.8 n=2"]     C --&gt; E["QDEP_RD &gt; 2.6? 17.6 n=41"]     E --&gt; F["23.4 n=21"]     E --&gt; G["29.8 n=14"]     F --&gt; H["35.9 n=9"]     G --&gt; H   </pre>
Relative' (ArrayB→ArrayA) BW > 18.9?	Relative' (ArrayC→ArrayA) BW > 15.0?
<pre> graph TD     A["BW &gt; 18.9?"] --&gt; B["BW &gt; 14.0? JMP_RD &gt; 308.5? 15.2 n=28"]     B --&gt; C["20.7 n=25"]     B --&gt; D["BW &gt; 39.0? LAT_RD &gt; 27.0? 52.9 n=8"]     D --&gt; E["77.6 n=5"]     D --&gt; F["25.2 n=17"]     D --&gt; G["35.6 n=17"]   </pre>	<pre> graph TD     A["BW &gt; 15.0?"] --&gt; B["BW &gt; 11.3? JMP_RD &gt; 320.5? 7.1 n=5"]     B --&gt; C["16.4 n=34"]     B --&gt; D["LAT_RD &gt; 38.9? 22.7 n=18"]     C --&gt; E["30.0 n=7"]     D --&gt; F["IOPS &gt; 154.5? 79.8 n=3"]     F --&gt; G["52.9 n=12"]     F --&gt; H["29.5 n=10"]     G --&gt; I["35.7 n=11"]     H --&gt; I   </pre>
Relative' (ArrayD→ArrayA) BW > 30.5?	Relative Fitness (ArrayB→ArrayA) JMP_RD > 0.5?
<pre> graph TD     A["BW &gt; 30.5?"] --&gt; B["BW &gt; 17.9? WR &gt; 0.8? 11.2 n=9"]     B --&gt; C["WR &gt; 0.4? 22.7 n=20"]     B --&gt; D["JMP_RD &gt; 291.5? 52.9 n=11"]     C --&gt; E["29.5 n=7"]     D --&gt; F["34.6 n=23"]     E --&gt; F   </pre>	<pre> graph TD     A["JMP_RD &gt; 0.5?"] --&gt; B["LAT_WR &gt; 37.6? 2.6 n=5"]     B --&gt; C["WR &gt; 0.1? 1.9 n=7"]     C --&gt; D["QDEP_RD &gt; 1.9? 1.3 n=4"]     C --&gt; E["RDSZ &gt; 37.6? 1.0 n=19"]     D --&gt; F["1.3 n=21"]     E --&gt; F   </pre>
Relative Fitness (ArrayC→ArrayA) LAT > 84.6?	Relative Fitness (ArrayD→ArrayA) BW > 26.9?
<pre> graph TD     A["LAT &gt; 84.6?"] --&gt; B["BW &gt; 34.4? JMP_RD &gt; 3013.0? 1.7 n=53"]     B --&gt; C["IOPS &gt; 123.0? 0.7 n=6"]     C --&gt; D["3.4 n=5"]     D --&gt; E["LAT &gt; 369.1? 2.3 n=17"]     E --&gt; F["3.5 n=2"]   </pre>	<pre> graph TD     A["BW &gt; 26.9?"] --&gt; B["QDEP_RD &gt; 1.9? 1.2 n=26"]     B --&gt; C["WRSZ &gt; 84.1? 2.0 n=1"]     C --&gt; D["WR &gt; 0.8? 0.9 n=9"]     C --&gt; E["WR &gt; 0.1? 1.1 n=22"]     D --&gt; F["0.7 n=18"]     E --&gt; F     F --&gt; G["QDEP_WR &gt; 57.7? 0.9 n=22"]     G --&gt; H["1.5 n=2"]   </pre>

Table B.1: Bandwidth models of ArrayA.

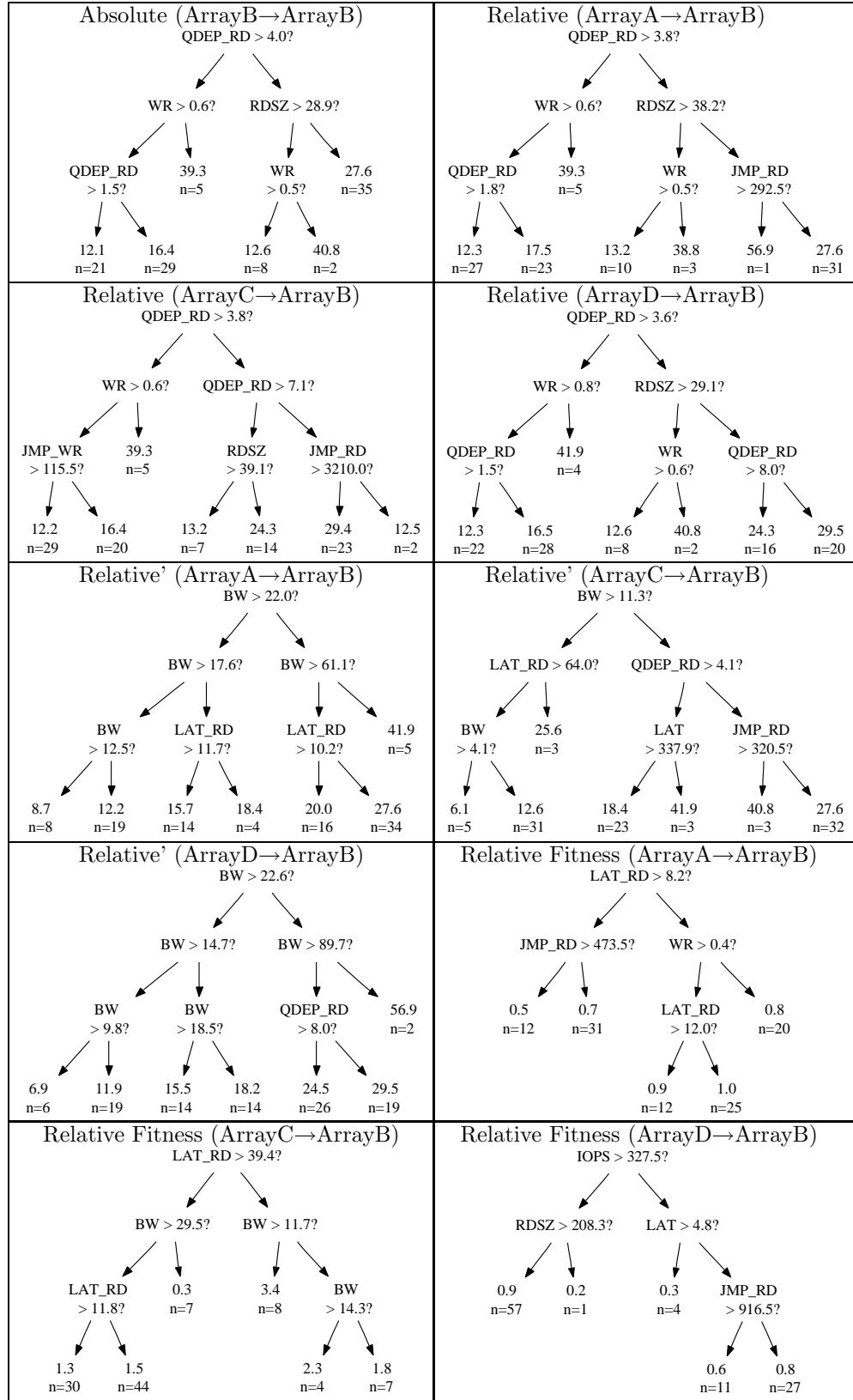


Table B.2: Bandwidth models of ArrayB.

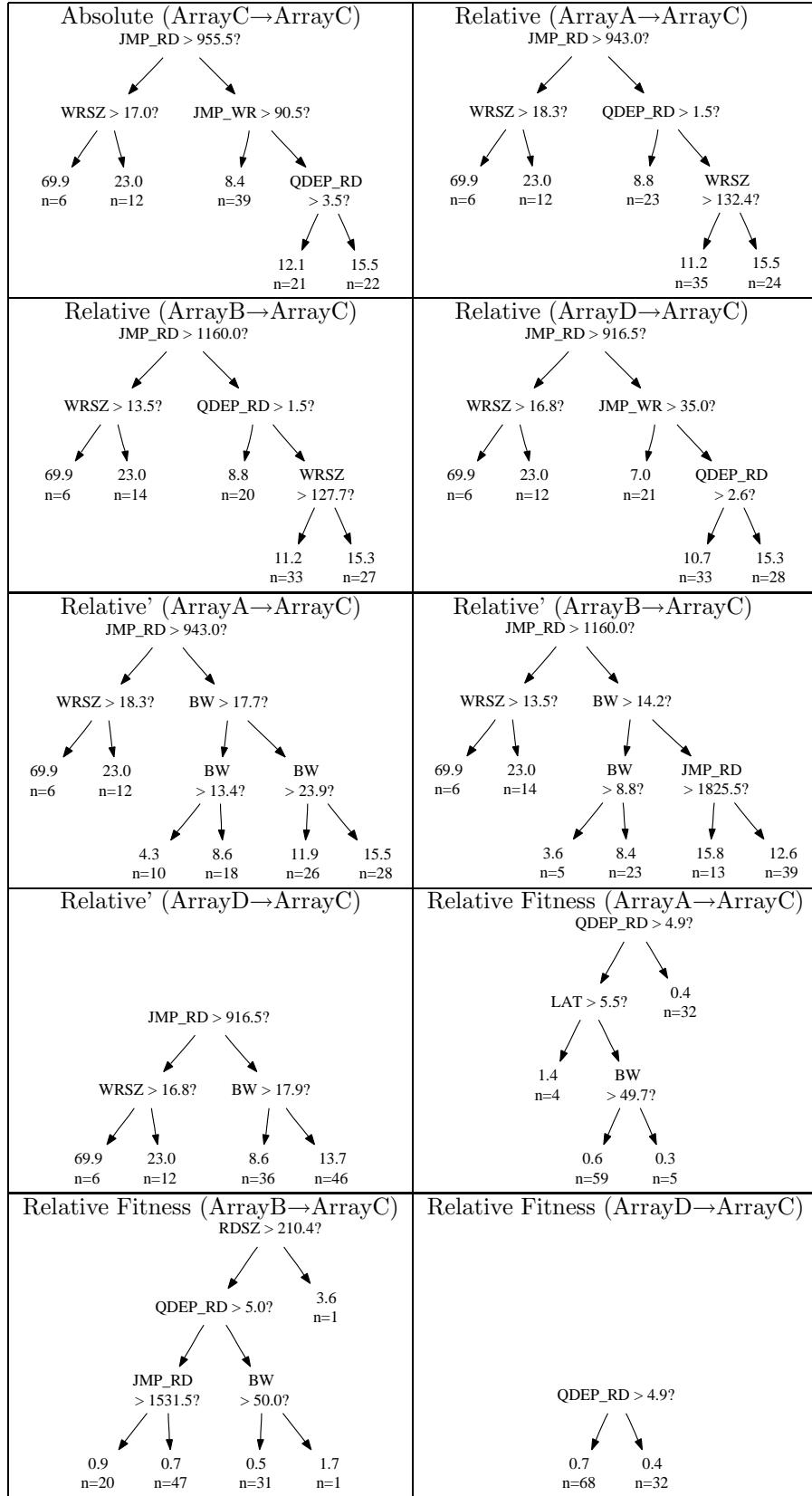


Table B.3: Bandwidth models of ArrayC.

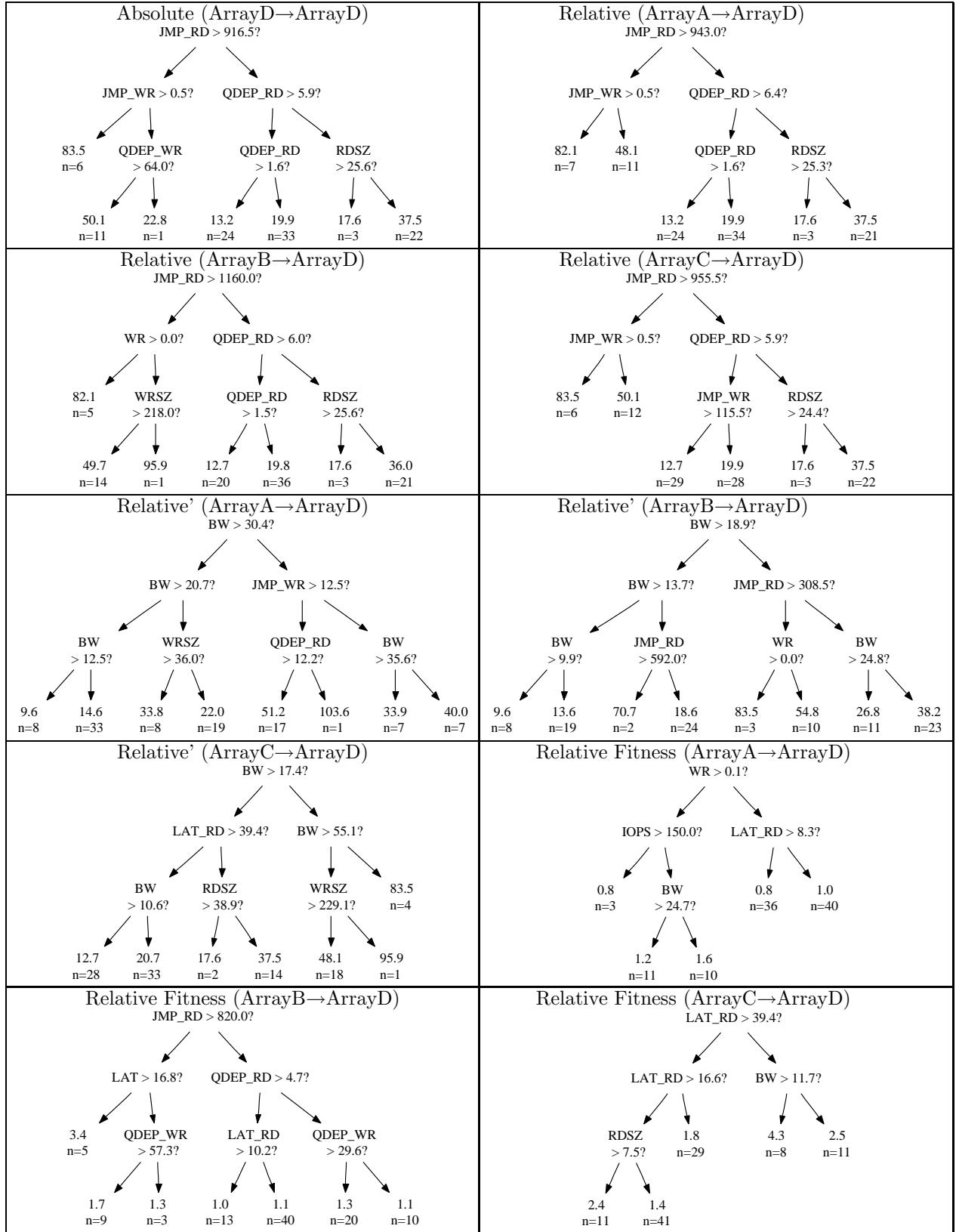


Table B.4: Bandwidth models of ArrayD.

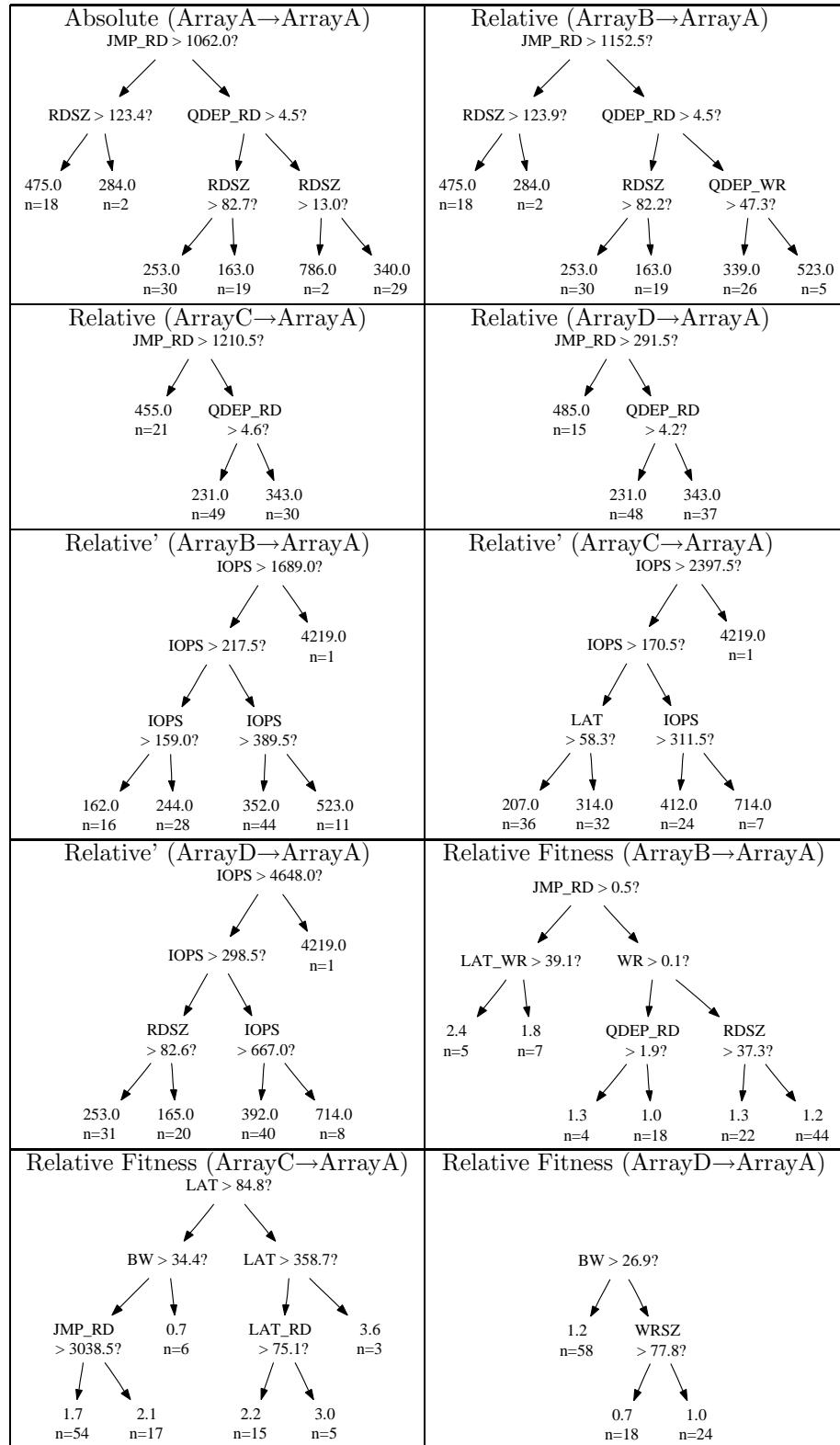


Table B.5: Throughput models of ArrayA.

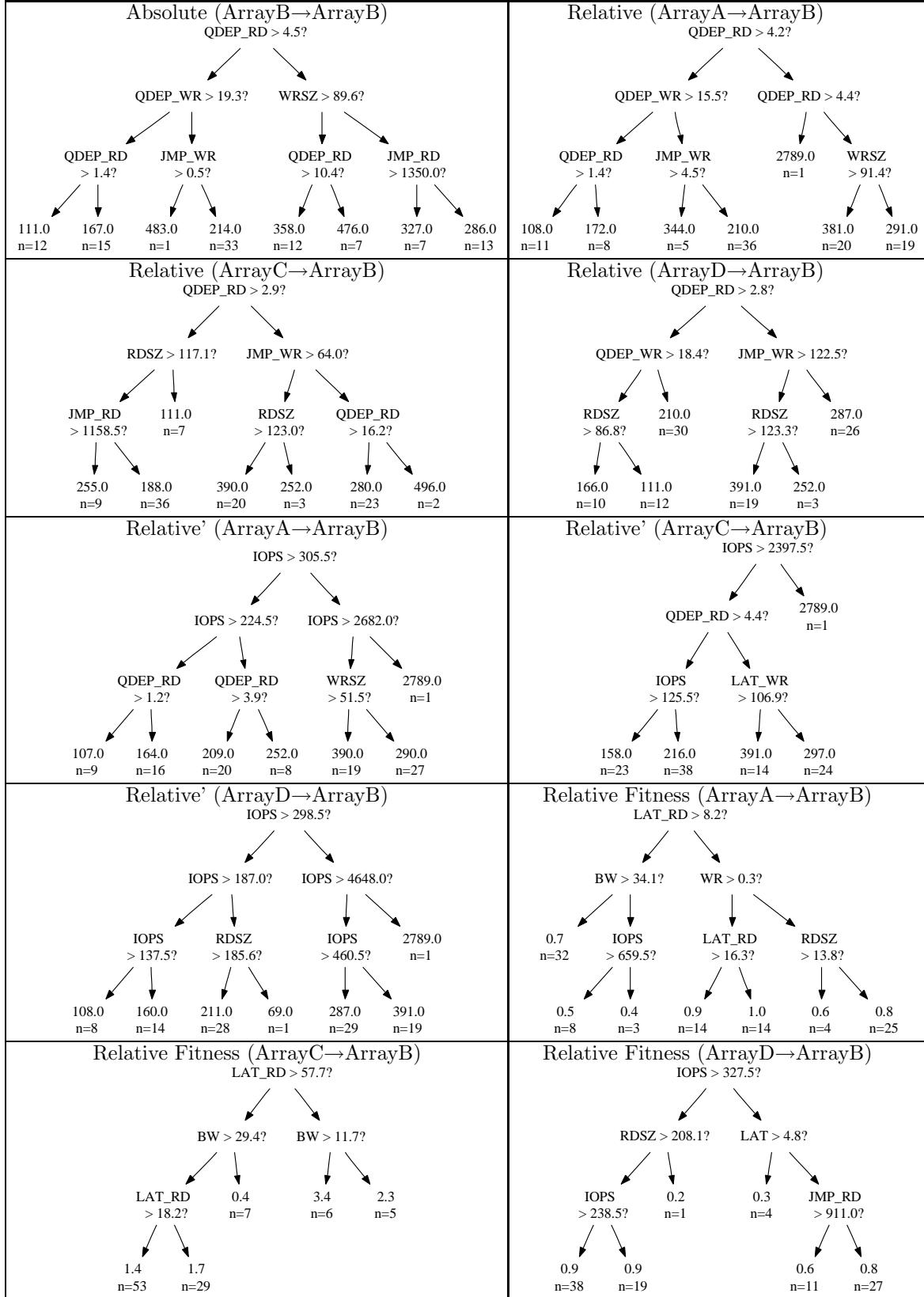


Table B.6: Throughput models of ArrayB.

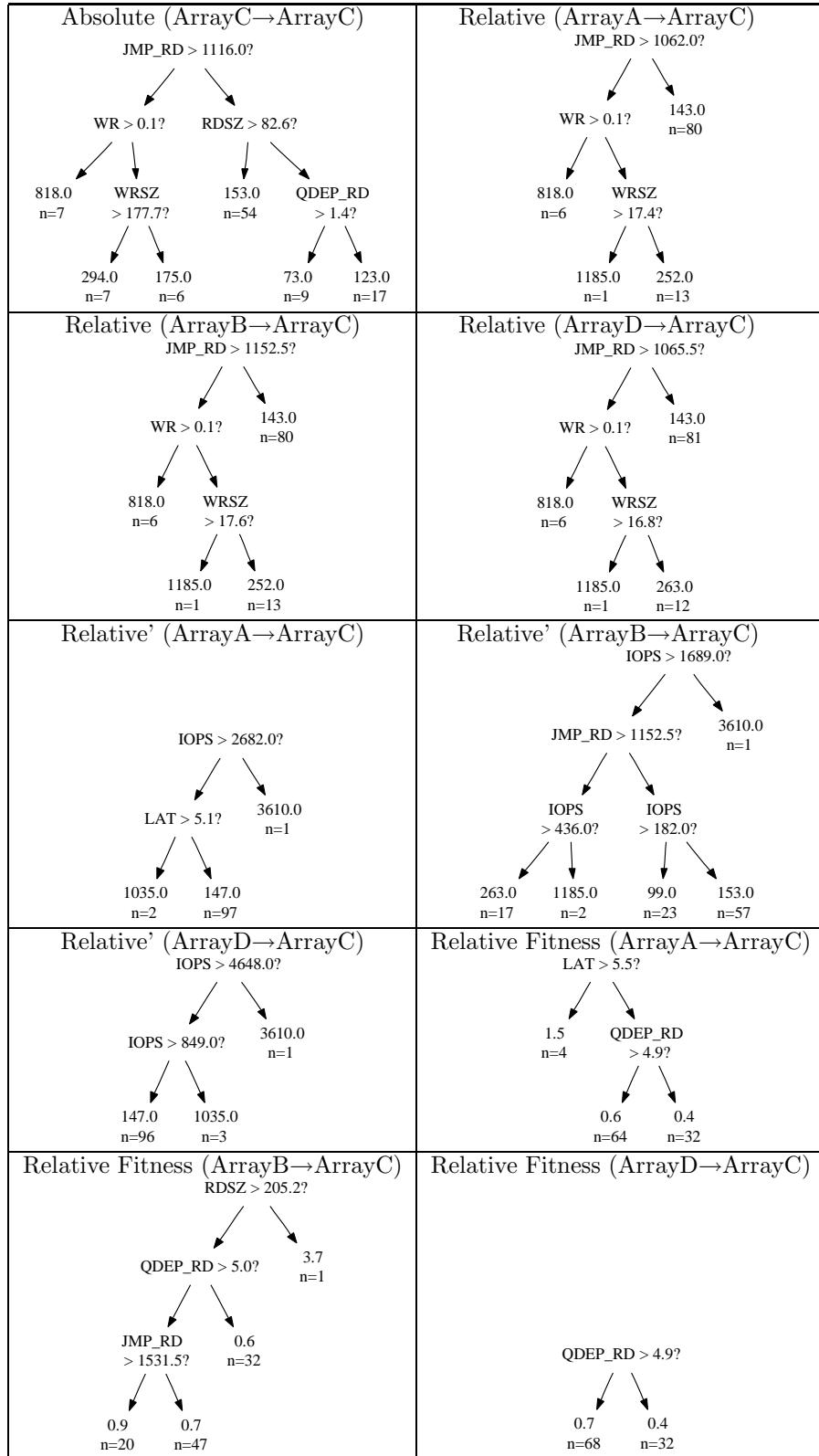


Table B.7: Throughput models of ArrayC.

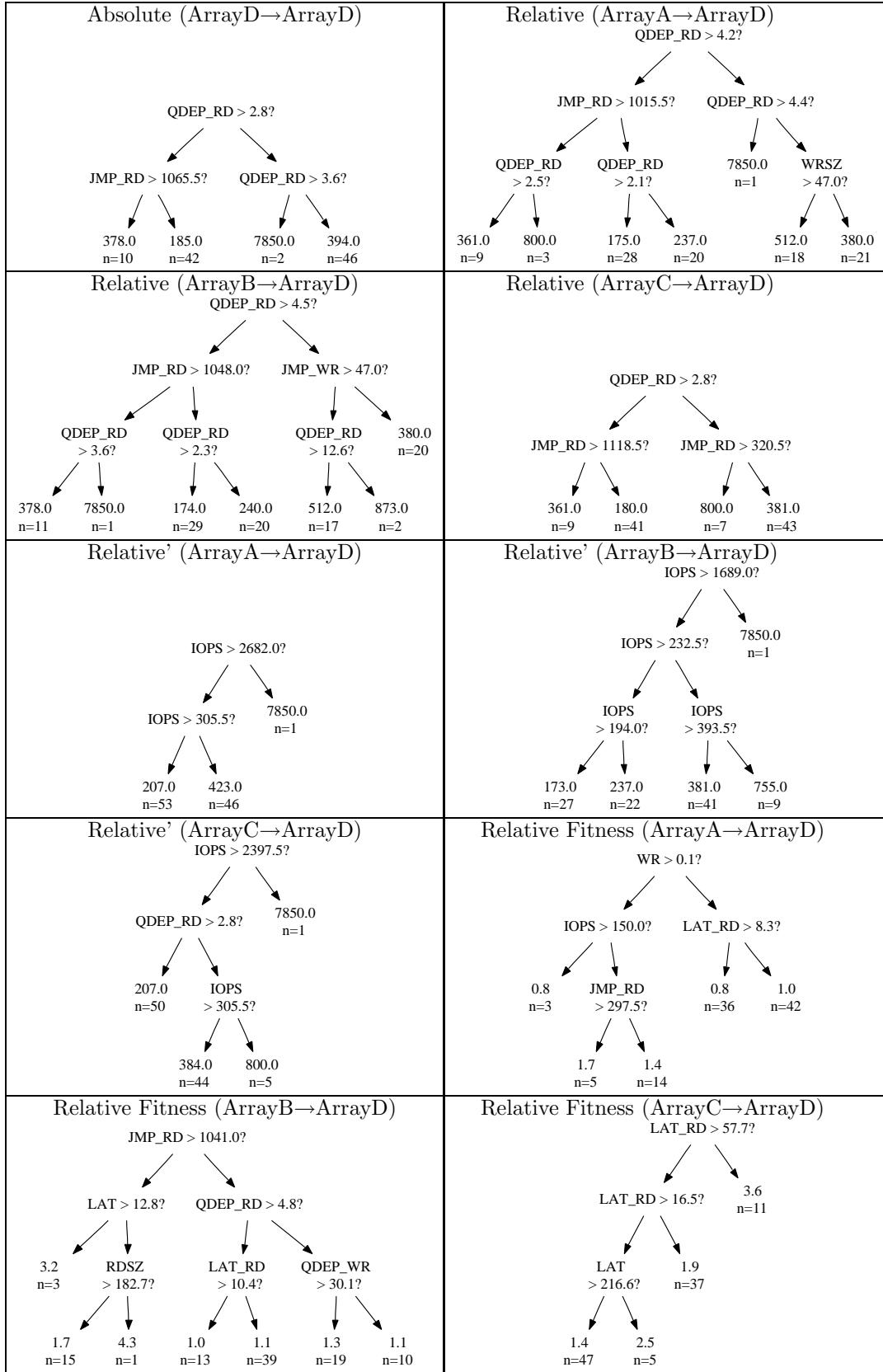


Table B.8: Throughput models of ArrayD.

Absolute (ArrayA→ArrayA) WR > 0.3?	Relative (ArrayB→ArrayA) WR > 0.3?
Relative (ArrayC→ArrayA) WR > 0.3?	Relative (ArrayD→ArrayA) WR > 0.3?
Relative' (ArrayB→ArrayA) LAT > 27.8?	Relative' (ArrayC→ArrayA) LAT > 67.9?
Relative' (ArrayD→ArrayA) LAT > 23.0?	Relative Fitness (ArrayB→ArrayA) JMP_WR > 13.5?
Relative Fitness (ArrayC→ArrayA)	Relative Fitness (ArrayD→ArrayA) LAT > 67.7?

Table B.9: Latency models of ArrayA.

Absolute (ArrayB→ArrayB) WR > 0.6?  WR > 0.5? QDEP_RD > 6.6? 15.6 n=63 34.8 n=18 QDEP_WR > 20.2? 29.3 n=2 64.6 n=11	Relative (ArrayA→ArrayB) WR > 0.6?  WR > 0.5? QDEP_RD > 5.9? 15.6 n=63 34.8 n=20 QDEP_WR > 17.8? 29.3 n=1 65.3 n=10
Relative (ArrayC→ArrayB) WR > 0.6?  WR > 0.4? WR > 0.2? 14.4 n=44 23.9 n=37 JMP_WR > 161.0? 68.3 n=7 35.5 n=6	Relative (ArrayD→ArrayB) WR > 0.6?  WR > 0.5? QDEP_RD > 6.8? 15.6 n=64 34.8 n=19 JMP_WR > 321.0? 65.3 n=9 36.9 n=2
Relative' (ArrayA→ArrayB) LAT > 94.5?  LAT > 94.5? LAT > 34.8? 14.0 n=41 22.9 n=22 LAT > 51.3? 34.8 n=19 63.7 n=13	Relative' (ArrayC→ArrayB) LAT > 185.9?  LAT > 185.9? LAT > 66.3? 14.0 n=41 22.3 n=19 LAT > 108.4? 32.7 n=22 63.7 n=12
Relative' (ArrayD→ArrayB) LAT > 114.3?  LAT > 114.3? LAT > 24.4? 14.2 n=42 22.9 n=24 LAT > 37.4? 36.2 n=18 64.3 n=11	Relative Fitness (ArrayA→ArrayB) BW > 39.8?  BW > 39.8? LAT > 16.3? 1.4 n=6 1.0 n=17 LAT > 11.7? LAT_RD > 17.4? 0.7 n=39 0.9 n=24 WR > 0.5? 1.1 n=3 1.8 n=8
Relative Fitness (ArrayC→ArrayB) LAT > 5.0?  LAT > 5.0? BW > 33.9? 4.2 n=3 BW > 33.9? LAT > 26.6? 0.6 n=17 0.4 n=77 1.8 n=3	Relative Fitness (ArrayD→ArrayB) LAT > 4.5?  LAT > 4.5? LAT > 58.2? 1.2 n=63 0.6 n=3 WRSZ > 186.2? 1.4 n=24 1.6 n=5

Table B.10: Latency models of ArrayB.

Absolute (ArrayC → ArrayC) WR > 0.9?	Relative (ArrayA → ArrayC) WR > 0.5?
Relative (ArrayB → ArrayC) WR > 0.5?	Relative (ArrayD → ArrayC) WR > 0.5?
Relative' (ArrayA → ArrayC) LAT > 50.0?	Relative' (ArrayB → ArrayC) LAT > 48.7?
Relative' (ArrayD → ArrayC) LAT > 37.4?	Relative Fitness (ArrayA → ArrayC) BW > 59.0?
Relative Fitness (ArrayB → ArrayC) RDSZ > 49.0?	Relative Fitness (ArrayD → ArrayC) RDSZ > 49.1?

Table B.11: Latency models of ArrayC.

Absolute (ArrayD→ArrayD)	Relative (ArrayA→ArrayD) RDSZ > 4.0?
Relative (ArrayB→ArrayD) RDSZ > 4.0?	Relative (ArrayC→ArrayD)
Relative' (ArrayA→ArrayD) LAT > 94.5?	Relative' (ArrayB→ArrayD) LAT > 125.9?
Relative' (ArrayC→ArrayD) WR > 0.9?	Relative Fitness (ArrayA→ArrayD) RDSZ > 4.0?
Relative Fitness (ArrayB→ArrayD) JMP_RD > 816.0?	Relative Fitness (ArrayC→ArrayD)

Table B.12: Latency models of ArrayD.



## Appendix C

### FitnessFS models

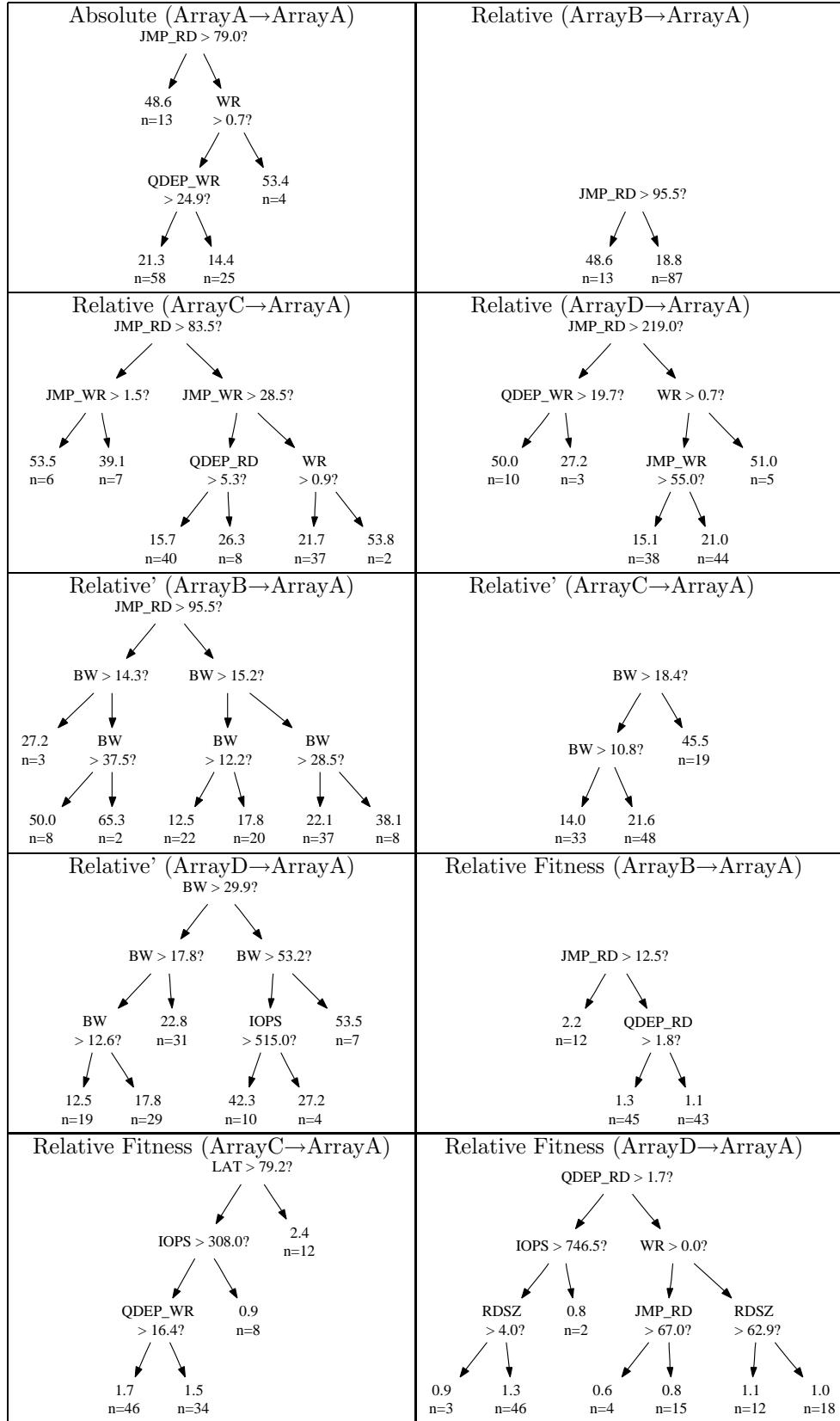


Table C.1: Bandwidth models of ArrayA.

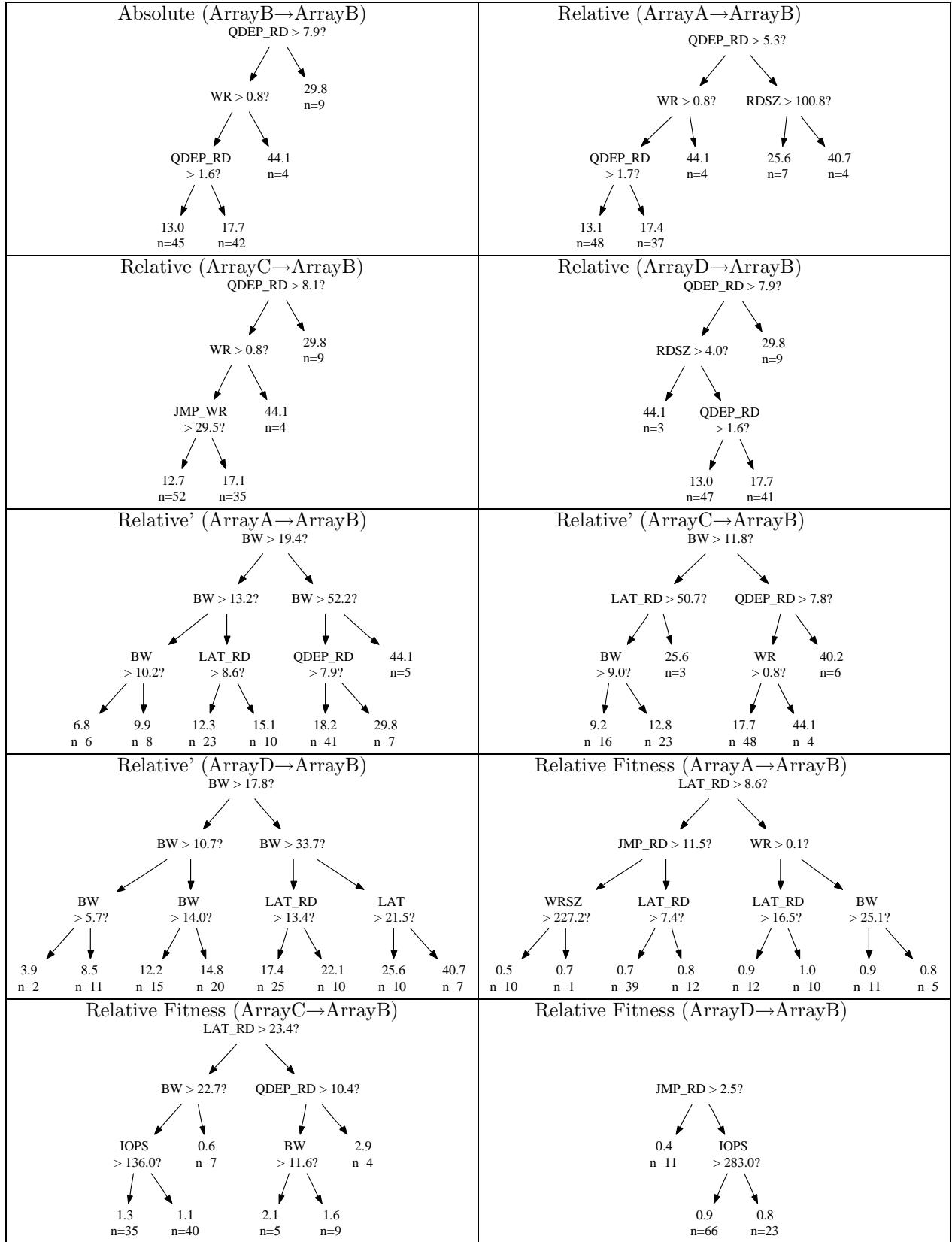


Table C.2: Bandwidth models of ArrayB.

Absolute (ArrayC → ArrayC)	Relative (ArrayA → ArrayC) JMP_RD > 315.0?
<pre> graph TD     A["JMP_RD &gt; 370.5?"] --&gt; B["WR &gt; 0.0?"]     A --&gt; C["JMP_WR &gt; 28.5?"]     B --&gt; D["71.1 n=6"]     B --&gt; E["18.8 n=13"]     C --&gt; F["9.5 n=45"]     C --&gt; G["13.3 n=36"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 315.0?"] --&gt; B["WR &gt; 0.0?"]     A --&gt; C["JMP_WR &gt; 20.5?"]     B --&gt; D["71.1 n=6"]     B --&gt; E["18.8 n=11"]     C --&gt; F["RDSZ &gt; 50.4?"]     C --&gt; G["WR &gt; 0.7?"]     F --&gt; H["4.7 n=9"]     F --&gt; I["9.6 n=13"]     G --&gt; J["12.0 n=57"]     G --&gt; K["21.4 n=4"]   </pre>
<pre> graph TD     A["JMP_RD &gt; 317.5?"] --&gt; B["WR &gt; 0.0?"]     A --&gt; C["JMP_WR &gt; 51.5?"]     B --&gt; D["71.1 n=6"]     B --&gt; E["QDEP_RD &gt; 1.8?"]     C --&gt; F["RDSZ &gt; 23.8?"]     C --&gt; G["WR &gt; 0.6?"]     E --&gt; H["18.8 n=9"]     E --&gt; I["30.1 n=1"]     F --&gt; J["4.7 n=7"]     F --&gt; K["9.5 n=31"]     G --&gt; L["13.1 n=42"]     G --&gt; M["21.4 n=4"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 323.5?"] --&gt; B["WR &gt; 0.0?"]     A --&gt; C["JMP_WR &gt; 16.0?"]     B --&gt; D["71.1 n=6"]     B --&gt; E["WR &gt; 0.8?"]     C --&gt; F["WR &gt; 0.7?"]     D --&gt; G["8.1 n=26"]     D --&gt; H["22.6 n=1"]     E --&gt; I["12.1 n=53"]     E --&gt; J["21.4 n=4"]   </pre>
<pre> graph TD     A["LAT &gt; 5.0?"] --&gt; B["71.1 n=4"]     A --&gt; C["BW &gt; 19.4?"]     B --&gt; D["9.7 n=46"]     B --&gt; E["BW &gt; 37.3?"]     C --&gt; F["13.8 n=39"]     C --&gt; G["21.6 n=11"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 317.5?"] --&gt; B["WR &gt; 0.0?"]     A --&gt; C["BW &gt; 13.4?"]     B --&gt; D["71.1 n=6"]     B --&gt; E["QDEP_RD &gt; 1.8?"]     C --&gt; F["BW &gt; 7.8?"]     C --&gt; G["LAT &gt; 51.9?"]     D --&gt; H["18.8 n=9"]     D --&gt; I["30.1 n=1"]     E --&gt; J["4.7 n=6"]     E --&gt; K["9.5 n=28"]     F --&gt; L["13.2 n=47"]     F --&gt; M["21.4 n=3"]   </pre>
<pre> graph TD     A["BW &gt; 75.9?"] --&gt; B["BW &gt; 17.9?"]     A --&gt; C["78.6 n=4"]     B --&gt; D["JMP_WR &gt; 16.0?"]     B --&gt; E["JMP_RD &gt; 445.0?"]     C --&gt; F["7.7 n=19"]     C --&gt; G["11.4 n=30"]     D --&gt; H["18.8 n=17"]     D --&gt; I["13.8 n=30"]   </pre>	<pre> graph TD     A["LAT &gt; 5.0?"] --&gt; B["1.4 n=4"]     A --&gt; C["BW &gt; 33.8?"]     B --&gt; D["0.6 n=63"]     B --&gt; E["QDEP_WR &gt; 38.5?"]     C --&gt; F["0.7 n=19"]     C --&gt; G["0.8 n=4"]     D --&gt; H["0.8 n=10"]     E --&gt; I["0.4 n=10"]   </pre>
<pre> graph TD     A["JMP_RD &gt; 0.5?"] --&gt; B["1.7 n=8"]     A --&gt; C["LAT_RD &gt; 16.8?"]     B --&gt; D["JMP_RD &gt; 508.5?"]     B --&gt; E["0.5 n=21"]     C --&gt; F["0.9 n=16"]     C --&gt; G["0.8 n=55"]   </pre>	<pre> graph TD     A["QDEP_RD &gt; 4.6?"] --&gt; B["RDSZ &gt; 4.0?"]     A --&gt; C["0.4 n=15"]     B --&gt; D["0.4 n=3"]     B --&gt; E["BW &gt; 12.4?"]     C --&gt; F["0.8 n=16"]     C --&gt; G["0.7 n=66"]   </pre>

Table C.3: Bandwidth models of ArrayC.

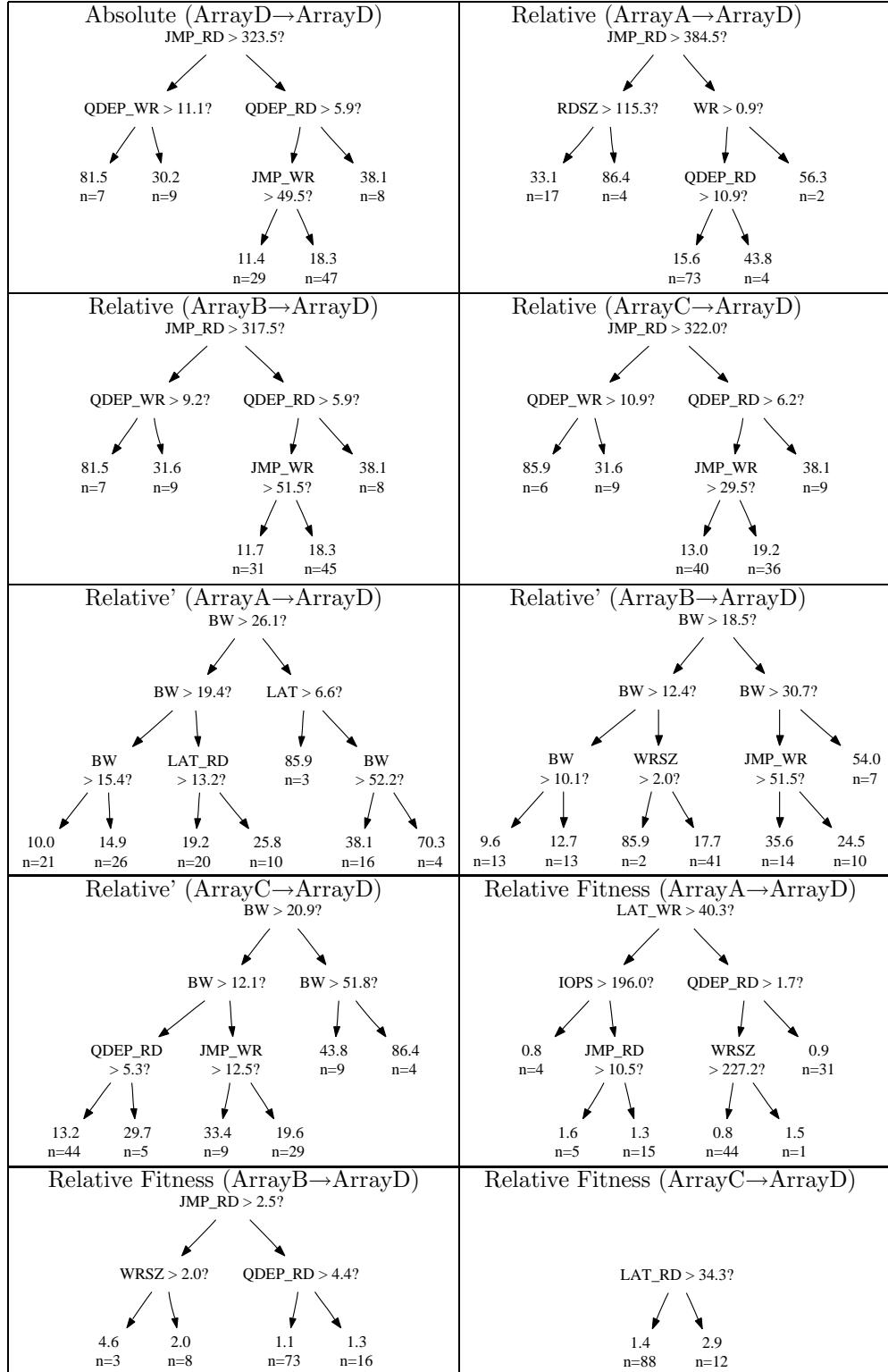


Table C.4: Bandwidth models of ArrayD.

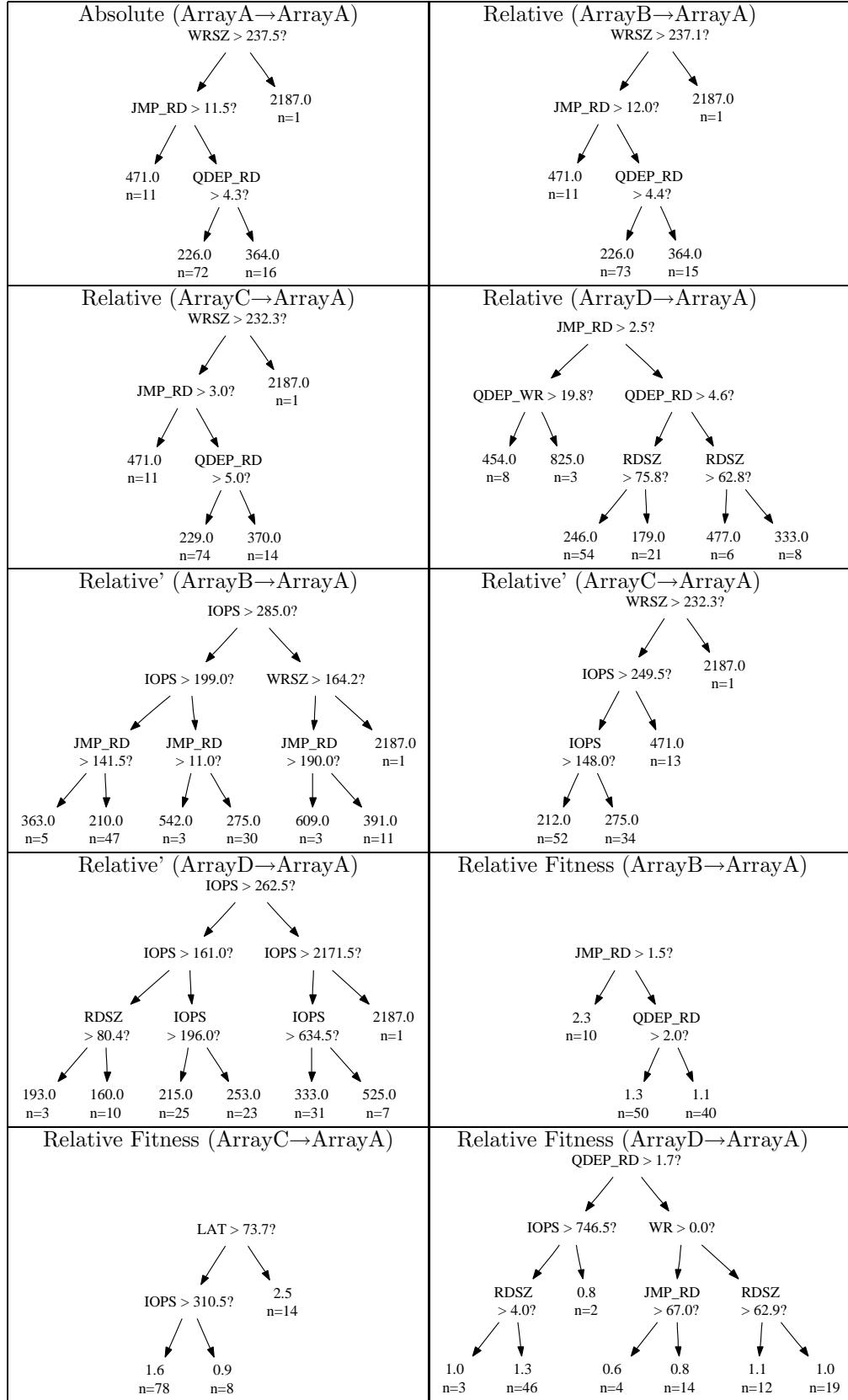


Table C.5: Throughput models of ArrayA.

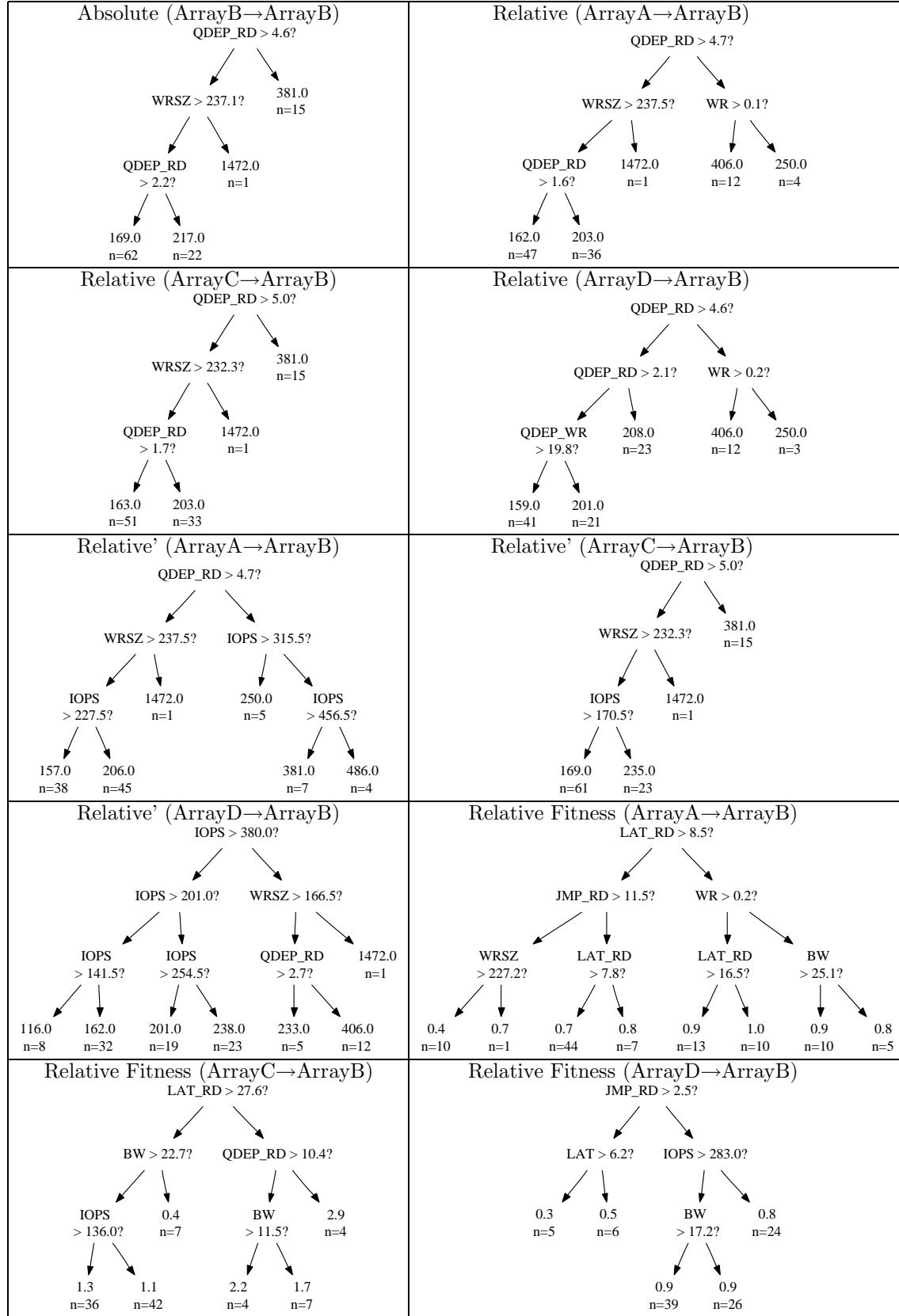


Table C.6: Throughput models of ArrayB.

Absolute (ArrayC→ArrayC) WRSZ > 232.3?	Relative (ArrayA→ArrayC) WRSZ > 237.5?
<pre> graph TD     A[WRSZ &gt; 232.3?] --&gt; B[JMP_RD &gt; 388.0?]     A --&gt; C[2294.0 n=1]     B --&gt; D[WRSZ &gt; 10.8?]     B --&gt; E[WRSZ &gt; 164.1?]     D --&gt; F[682.0 n=8]     D --&gt; G[187.0 n=12]     E --&gt; H[149.0 n=54]     E --&gt; I[124.0 n=25]   </pre>	<pre> graph TD     A[WRSZ &gt; 237.5?] --&gt; B[JMP_RD &gt; 1.5?]     A --&gt; C[2294.0 n=1]     B --&gt; D[424.0 n=9]     B --&gt; E[JMP_RD &gt; 422.5?]     D --&gt; F[187.0 n=16]     E --&gt; G[132.0 n=74]   </pre>
Relative (ArrayB→ArrayC) WRSZ > 237.1?	Relative (ArrayD→ArrayC)
<pre> graph TD     A[WRSZ &gt; 237.1?] --&gt; B[JMP_RD &gt; 382.5?]     A --&gt; C[2294.0 n=1]     B --&gt; D[WR &gt; 0.1?]     B --&gt; E[135.0 n=80]     D --&gt; F[682.0 n=8]     D --&gt; G[187.0 n=11]   </pre>	<pre> graph TD     A[JMP_RD &gt; 2.5?] --&gt; B[WR &gt; 0.4?]     A --&gt; C[JMP_RD &gt; 419.5?]     B --&gt; D[691.0 n=7]     B --&gt; E[169.0 n=4]     C --&gt; F[187.0 n=14]     C --&gt; G[132.0 n=75]   </pre>
Relative' (ArrayA→ArrayC) WRSZ > 237.5?	Relative' (ArrayB→ArrayC) WRSZ > 237.1?
<pre> graph TD     A[WRSZ &gt; 237.5?] --&gt; B[LAT &gt; 5.8?]     A --&gt; C[2294.0 n=1]     B --&gt; D[682.0 n=3]     B --&gt; E[IOPS &gt; 264.5?]     D --&gt; F[128.0 n=55]     E --&gt; G[187.0 n=41]   </pre>	<pre> graph TD     A[WRSZ &gt; 237.1?] --&gt; B[JMP_RD &gt; 382.5?]     A --&gt; C[2294.0 n=1]     B --&gt; D[LAT &gt; 12.0?]     B --&gt; E[135.0 n=80]     D --&gt; F[691.0 n=3]     D --&gt; G[258.0 n=16]   </pre>
Relative' (ArrayD→ArrayC) IOPS > 701.5?	Relative Fitness (ArrayA→ArrayC)
<pre> graph TD     A[IOPS &gt; 701.5?] --&gt; B[IOPS &gt; 196.0?]     A --&gt; C[744.0 n=6]     B --&gt; D[IOPS &gt; 147.5?]     B --&gt; E[LAT &gt; 13.1?]     D --&gt; F[88.0 n=9]     D --&gt; G[128.0 n=29]     E --&gt; H[229.0 n=23]     E --&gt; I[149.0 n=33]   </pre>	<pre> graph TD     A[LAT &gt; 5.8?] --&gt; B[1.4 n=4]     A --&gt; C[BW &gt; 33.8?]     B --&gt; D[0.6 n=82]     C --&gt; E[0.4 n=14]   </pre>
Relative Fitness (ArrayB→ArrayC) RDSZ > 197.8?	Relative Fitness (ArrayD→ArrayC) QDEP_RD > 4.6?
<pre> graph TD     A[RDSZ &gt; 197.8?] --&gt; B[LAT_RD &gt; 16.5?]     A --&gt; C[6.5 n=1]     B --&gt; D[JMP_RD &gt; 403.0?]     B --&gt; E[0.5 n=21]     D --&gt; F[1.1 n=18]     D --&gt; G[0.8 n=60]   </pre>	<pre> graph TD     A[QDEP_RD &gt; 4.6?] --&gt; B[BW &gt; 14.6?]     A --&gt; C[0.4 n=15]     B --&gt; D[QDEP_WR &gt; 15.4?]     B --&gt; E[RDSZ &gt; 4.0?]     D --&gt; F[0.7 n=11]     D --&gt; G[0.9 n=17]     E --&gt; H[0.4 n=3]     E --&gt; I[0.7 n=54]   </pre>

Table C.7: Throughput models of ArrayC.

Absolute (ArrayD→ArrayD) QDEP_RD > 4.6?	Relative (ArrayA→ArrayD) WRSZ > 237.5?
<pre> graph TD     A["QDEP_RD &gt; 4.6?"] --&gt; B["JMP_RD &gt; 0.5?"]     A --&gt; C["502.0 n=15"]     B --&gt; D["624.0 n=9"]     B --&gt; E["QDEP_RD &gt; 2.1? 176.0 n=54"]     E --&gt; F["249.0 n=22"]   </pre>	<pre> graph TD     A["WRSZ &gt; 237.5?"] --&gt; B["JMP_WR &gt; 36.5?"]     A --&gt; C["3339.0 n=1"]     B --&gt; D["QDEP_RD &gt; 4.7? 284.0 n=29"]     D --&gt; E["184.0 n=56"]     D --&gt; F["502.0 n=14"]   </pre>
Relative (ArrayB→ArrayD) WRSZ > 237.1?	Relative (ArrayC→ArrayD) WRSZ > 232.3?
<pre> graph TD     A["WRSZ &gt; 237.1?"] --&gt; B["WRSZ &gt; 2.0? 507.0 n=13"]     A --&gt; C["3339.0 n=1"]     B --&gt; D["QDEP_RD &gt; 2.2? 181.0 n=60"]     D --&gt; E["267.0 n=26"]   </pre>	<pre> graph TD     A["WRSZ &gt; 232.3?"] --&gt; B["QDEP_RD &gt; 5.0? 379.0 n=12"]     A --&gt; C["3339.0 n=1"]     B --&gt; D["JMP_RD &gt; 245.5? 193.0 n=72"]     D --&gt; E["502.0 n=15"]   </pre>
Relative' (ArrayA→ArrayD) IOPS > 462.5?	Relative' (ArrayB→ArrayD) IOPS > 285.0?
<pre> graph TD     A["IOPS &gt; 462.5?"] --&gt; B["IOPS &gt; 252.5? 172.0 n=49"]     A --&gt; C["WRSZ &gt; 189.8? 624.0 n=1"]     B --&gt; D["RDSZ &gt; 181.2? 429.0 n=9"]     D --&gt; E["WR &gt; 0.1? 272.0 n=31"]   </pre>	<pre> graph TD     A["IOPS &gt; 285.0?"] --&gt; B["IOPS &gt; 186.0? 321.0 n=5"]     A --&gt; C["WRSZ &gt; 164.2? 170.0 n=41"]     B --&gt; D["JMP_RD &gt; 141.5? 752.0 n=3"]     D --&gt; E["JMP_RD &gt; 11.0? 260.0 n=36"]     E --&gt; F["IOPS &gt; 432.5? 502.0 n=10"]     F --&gt; G["3339.0 n=1"]     F --&gt; H["860.0 n=4"]   </pre>
Relative' (ArrayC→ArrayD) WRSZ > 232.3?	Relative Fitness (ArrayA→ArrayD) LAT_WR > 43.4?
<pre> graph TD     A["WRSZ &gt; 232.3?"] --&gt; B["IOPS &gt; 380.0? 203.0 n=80"]     A --&gt; C["3339.0 n=1"]     B --&gt; D["QDEP_RD &gt; 5.0? 502.0 n=14"]     D --&gt; E["829.0 n=5"]   </pre>	<pre> graph TD     A["LAT_WR &gt; 43.4?"] --&gt; B["IOPS &gt; 196.0? 0.8 n=4"]     A --&gt; C["LAT_RD &gt; 7.5? 1.3 n=21"]     B --&gt; D["RDSZ &gt; 193.2? 2.9 n=1"]     D --&gt; E["BW &gt; 52.2? 0.8 n=39"]     E --&gt; F["RDSZ &gt; 63.7? 1.0 n=20"]     F --&gt; G["1.0 n=13"]   </pre>
Relative Fitness (ArrayB→ArrayD)	Relative Fitness (ArrayC→ArrayD) LAT_RD > 34.0?
<pre> graph TD     A["RDSZ &gt; 197.8?"] --&gt; B["JMP_RD &gt; 12.0? 2.1 n=11"]     A --&gt; C["9.6 n=1"]     B --&gt; D["1.1 n=88"]   </pre>	<pre> graph TD     A["LAT_RD &gt; 34.0?"] --&gt; B["WR &gt; 0.8? 1.4 n=77"]     A --&gt; C["QDEP_RD &gt; 10.4? 2.6 n=4"]     B --&gt; D["LAT_RD &gt; 21.0? 1.8 n=7"]     D --&gt; E["2.5 n=8"]     E --&gt; F["4.0 n=4"]   </pre>

Table C.8: Throughput models of ArrayD.

Absolute (ArrayA → ArrayA) WR > 0.3?	Relative (ArrayB → ArrayA)
<pre> graph TD     A[WR &gt; 0.3?] --&gt; B[QDEP_RD &gt; 5.2?]     A --&gt; C[WR &gt; 0.6?]     B --&gt; D[WR &gt; 0.0?]     B --&gt; E[22.0 n=9]     C --&gt; F[26.7 n=42]     C --&gt; G[69.9 n=8]     D --&gt; H[7.7 n=17]     D --&gt; I[16.6 n=24]     </pre>	<pre> graph TD     A[WR &gt; 0.2?] --&gt; B[14.5 n=47]     A --&gt; C[WR &gt; 0.6?]     C --&gt; D[26.7 n=46]     C --&gt; E[69.9 n=7]     </pre>
Relative (ArrayC → ArrayA) WR > 0.3?	Relative (ArrayD → ArrayA)
<pre> graph TD     A[WR &gt; 0.3?] --&gt; B[QDEP_RD &gt; 5.3?]     A --&gt; C[WR &gt; 0.6?]     B --&gt; D[JMP_WR &gt; 2.5?]     B --&gt; E[WR &gt; 0.1?]     B --&gt; F[WRSZ &gt; 24.5?]     D --&gt; G[7.7 n=13]     D --&gt; H[14.7 n=23]     E --&gt; I[22.0 n=9]     E --&gt; J[59.8 n=1]     F --&gt; K[16.1 n=4]     F --&gt; L[26.7 n=43]     </pre>	<pre> graph TD     A[WR &gt; 0.3?] --&gt; B[JMP_RD &gt; 0.5?]     A --&gt; C[WR &gt; 0.6?]     B --&gt; D[4.2 n=5]     B --&gt; E[16.1 n=42]     C --&gt; F[26.7 n=46]     C --&gt; G[69.9 n=7]     </pre>
Relative' (ArrayB → ArrayA) WR > 0.2?	Relative' (ArrayC → ArrayA) LAT > 42.3?
<pre> graph TD     A[WR &gt; 0.2?] --&gt; B[LAT &gt; 12.0?]     A --&gt; C[LAT &gt; 41.4?]     B --&gt; D[7.7 n=16]     B --&gt; E[LAT_RD &gt; 17.6?]     C --&gt; F[26.6 n=44]     C --&gt; G[JMP_RD &gt; 1068.5?]     D --&gt; H[14.7 n=23]     D --&gt; I[22.8 n=8]     E --&gt; J[52.5 n=4]     G --&gt; K[81.3 n=5]     </pre>	<pre> graph TD     A[LAT &gt; 42.3?] --&gt; B[LAT &gt; 13.9?]     A --&gt; C[LAT &gt; 139.5?]     B --&gt; D[7.1 n=11]     B --&gt; E[JMP_WR &gt; 64.5?]     C --&gt; F[16.1 n=27]     C --&gt; G[JMP_RD &gt; 1318.0?]     D --&gt; H[21.4 n=9]     D --&gt; I[27.2 n=47]     E --&gt; J[52.9 n=2]     G --&gt; K[101.5 n=4]     </pre>
Relative' (ArrayD → ArrayA) LAT > 12.6?	Relative Fitness (ArrayB → ArrayA) JMP_WR > 4.0?
<pre> graph TD     A[LAT &gt; 12.6?] --&gt; B[LAT &gt; 6.0?]     A --&gt; C[LAT &gt; 35.1?]     B --&gt; D[4.6 n=6]     B --&gt; E[IOPS &gt; 121.0?]     C --&gt; F[22.9 n=25]     C --&gt; G[LAT &gt; 16.0?]     D --&gt; H[7.7 n=4]     D --&gt; I[14.7 n=29]     E --&gt; J[28.2 n=31]     G --&gt; K[81.3 n=5]     </pre>	<pre> graph TD     A[JMP_WR &gt; 4.0?] --&gt; B[1.0 n=27]     A --&gt; C[BW &gt; 6.5?]     B --&gt; D[2.6 n=3]     B --&gt; E[RDSZ &gt; 53.2?]     C --&gt; F[1.4 n=34]     C --&gt; G[1.2 n=36]     </pre>
Relative Fitness (ArrayC → ArrayA) BW > 32.5?	Relative Fitness (ArrayD → ArrayA) WR > 0.2?
<pre> graph TD     A[BW &gt; 32.5?] --&gt; B[0.9 n=9]     A --&gt; C[BW &gt; 83.1?]     B --&gt; D[1.4 n=27]     B --&gt; E[2.0 n=3]     C --&gt; F[2.5 n=7]     C --&gt; G[BW &gt; 28.9?]     D --&gt; H[1.7 n=44]     D --&gt; I[1.3 n=10]     E --&gt; J[1.5 n=5]     G --&gt; K[69.9 n=8]     </pre>	<pre> graph TD     A[WR &gt; 0.2?] --&gt; B[BW &gt; 13.3?]     A --&gt; C[WRSZ &gt; 40.2?]     B --&gt; D[0.9 n=9]     B --&gt; E[BW &gt; 83.1?]     C --&gt; F[2.5 n=7]     C --&gt; G[BW &gt; 28.9?]     D --&gt; H[1.4 n=27]     D --&gt; I[2.0 n=3]     E --&gt; J[1.7 n=44]     G --&gt; K[1.3 n=10]     </pre>

Table C.9: Latency models of ArrayA.

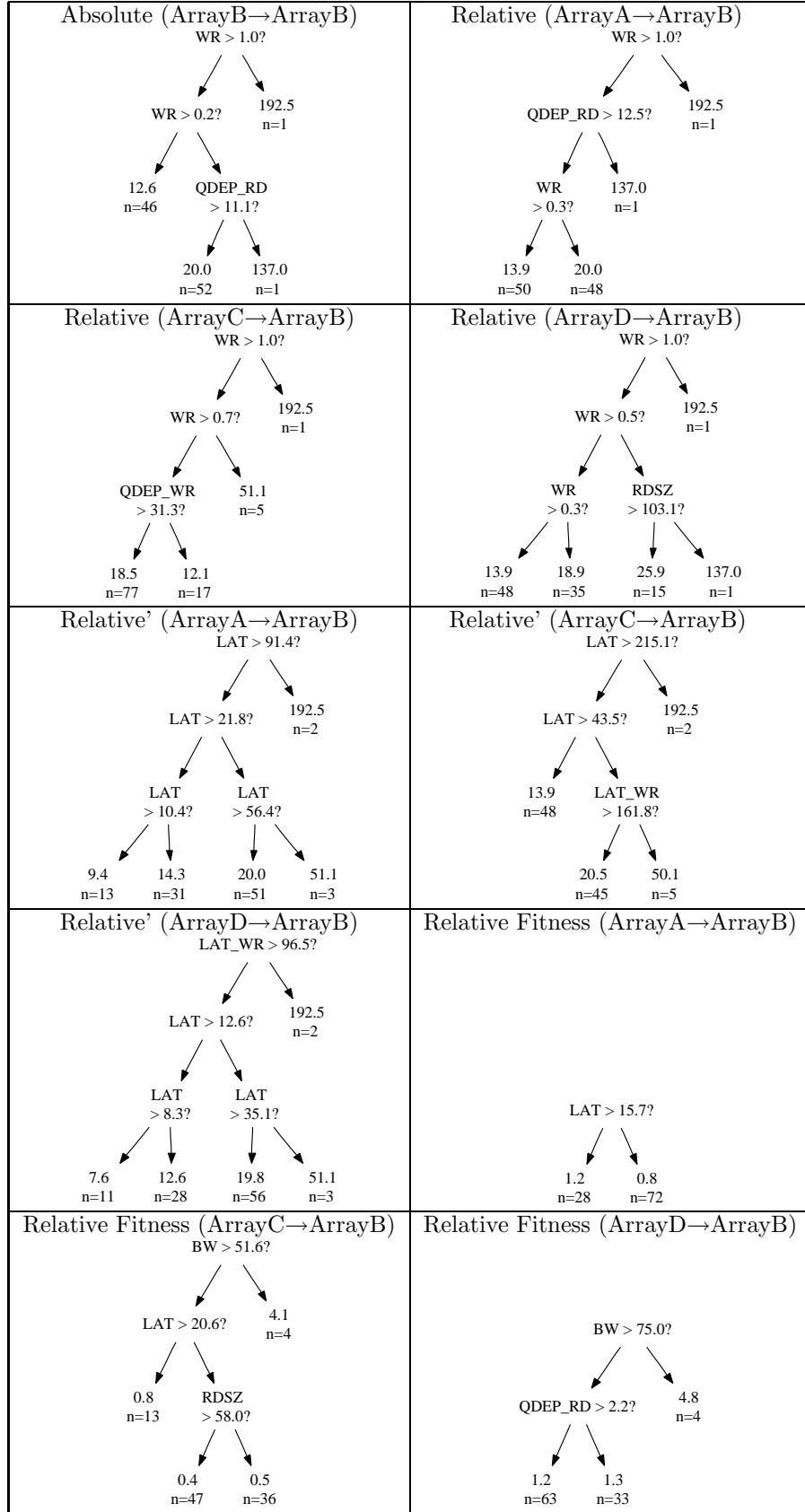


Table C.10: Latency models of ArrayB.

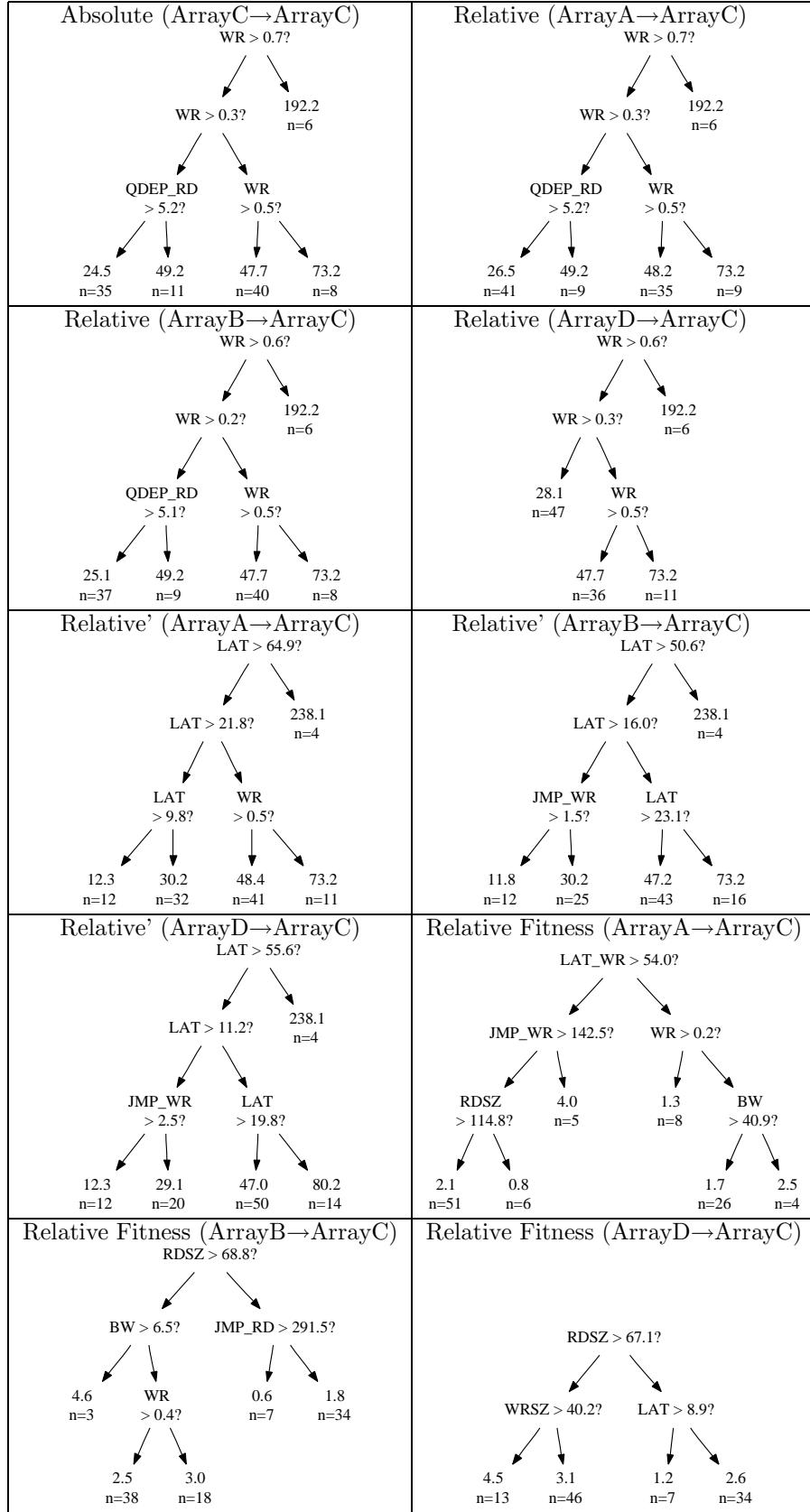


Table C.11: Latency models of ArrayC.

<p><b>Absolute (ArrayD→ArrayD)</b> WR &gt; 1.0?</p>	<p><b>Relative (ArrayA→ArrayD)</b> WR &gt; 1.0?</p>
<p><b>Relative (ArrayB→ArrayD)</b> WR &gt; 1.0?</p>	<p><b>Relative (ArrayC→ArrayD)</b> WR &gt; 0.9?</p>
<p><b>Relative' (ArrayA→ArrayD)</b> LAT &gt; 64.9?</p>	<p><b>Relative' (ArrayB→ArrayD)</b> LAT &gt; 50.6?</p>
<p><b>Relative' (ArrayC→ArrayD)</b> LAT &gt; 139.5?</p>	<p><b>Relative Fitness (ArrayA→ArrayD)</b> IOPS &gt; 156.5?</p>
<p><b>Relative Fitness (ArrayB→ArrayD)</b> QDEP_RD &gt; 2.2?</p>	<p><b>Relative Fitness (ArrayC→ArrayD)</b> LAT &gt; 19.2?</p>

Table C.12: Latency models of ArrayD.



## Appendix D

### FitnessCache models

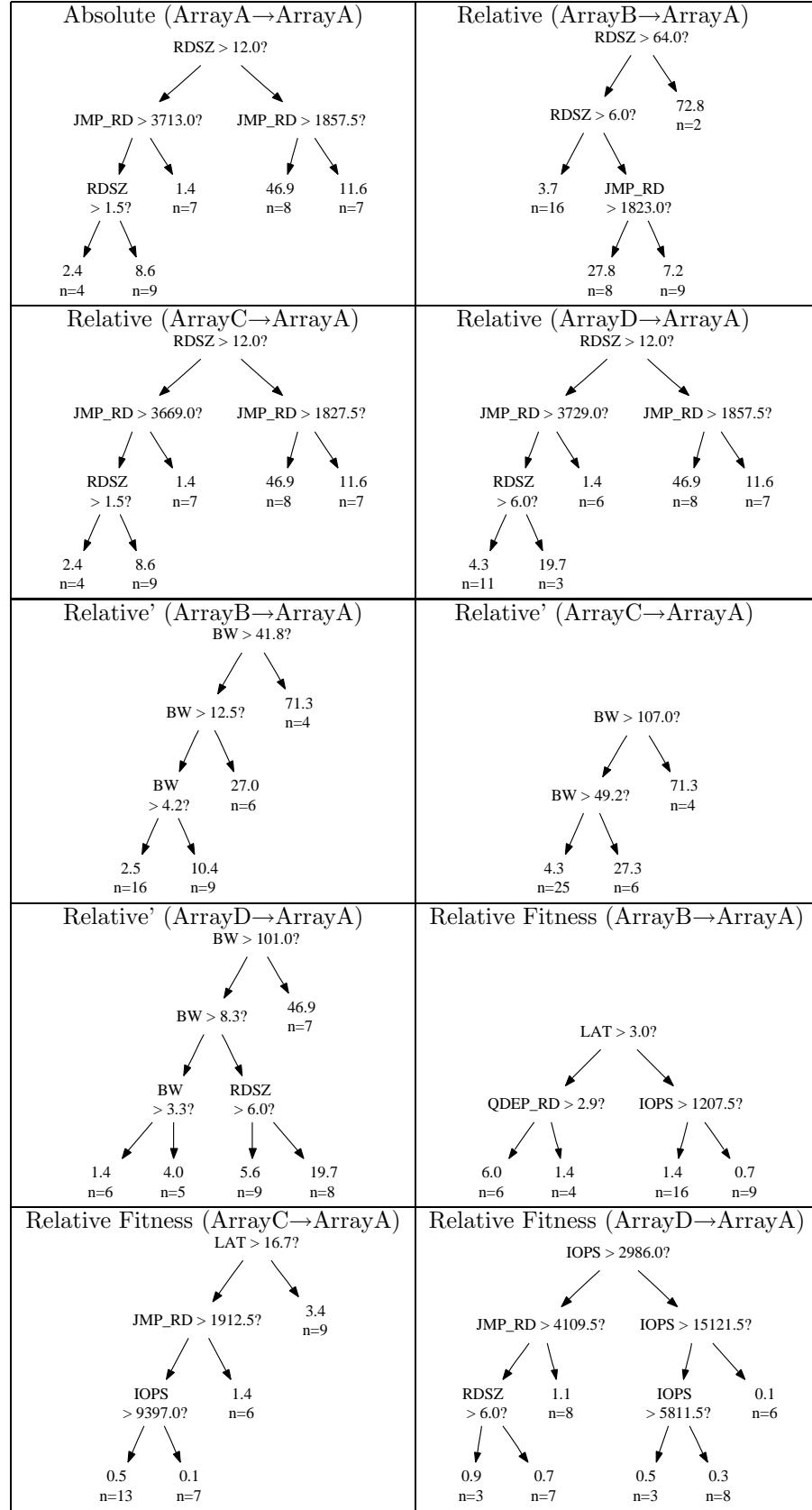


Table D.1: Bandwidth models of ArrayA.

Absolute (ArrayB→ArrayB) RDSZ > 64.0?	Relative (ArrayA→ArrayB) QDEP_RD > 15.7?
<pre> graph TD     A["RDSZ &gt; 64.0?"] --&gt; B["QDEP_RD &gt; 15.5?"]     B --&gt; C["RDSZ &gt; 12.0?"]     B --&gt; D["104.7 n=2"]     C --&gt; E["1.9 n=20"]     C --&gt; F["11.4 n=11"]     F --&gt; G["RDSZ &gt; 12.0?"]     G --&gt; H["72.1 n=2"]     G --&gt; I["72.1 n=2"]     I --&gt; J["1.9 n=20"]     I --&gt; K["11.4 n=11"]   </pre>	<pre> graph TD     A["QDEP_RD &gt; 15.7?"] --&gt; B["RDSZ &gt; 12.0?"]     B --&gt; C["1.9 n=20"]     B --&gt; D["72.1 n=3"]     C --&gt; E["1.9 n=20"]     C --&gt; F["QDEP_RD &gt; 2.9?"]     F --&gt; G["5.0 n=5"]     F --&gt; H["24.7 n=7"]     G --&gt; I["5.0 n=5"]     G --&gt; J["24.7 n=7"]   </pre>
Relative (ArrayC→ArrayB) RDSZ > 64.0?	Relative (ArrayD→ArrayB) RDSZ > 32.0?
<pre> graph TD     A["RDSZ &gt; 64.0?"] --&gt; B["QDEP_RD &gt; 14.3?"]     B --&gt; C["RDSZ &gt; 12.0?"]     B --&gt; D["104.7 n=1"]     C --&gt; E["1.9 n=20"]     C --&gt; F["14.0 n=12"]     F --&gt; G["RDSZ &gt; 12.0?"]     G --&gt; H["72.1 n=2"]     G --&gt; I["72.1 n=2"]     I --&gt; J["1.9 n=20"]     I --&gt; K["14.0 n=12"]   </pre>	<pre> graph TD     A["RDSZ &gt; 32.0?"] --&gt; B["RDSZ &gt; 12.0?"]     B --&gt; C["1.9 n=20"]     B --&gt; D["88.9 n=4"]     C --&gt; E["1.9 n=20"]     C --&gt; F["QDEP_RD &gt; 2.8?"]     F --&gt; G["5.0 n=4"]     F --&gt; H["24.7 n=7"]     G --&gt; I["5.0 n=4"]     G --&gt; J["24.7 n=7"]   </pre>
Relative' (ArrayA→ArrayB) BW > 41.3?	Relative' (ArrayC→ArrayB) BW > 107.8?
<pre> graph TD     A["BW &gt; 41.3?"] --&gt; B["BW &gt; 11.0?"]     B --&gt; C["88.9 n=4"]     B --&gt; D["1.9 n=21"]     C --&gt; E["1.9 n=21"]     C --&gt; F["QDEP_RD &gt; 2.9?"]     F --&gt; G["5.6 n=3"]     F --&gt; H["21.4 n=7"]   </pre>	<pre> graph TD     A["BW &gt; 107.8?"] --&gt; B["BW &gt; 91.1?"]     B --&gt; C["88.9 n=3"]     B --&gt; D["3.2 n=28"]     C --&gt; E["3.2 n=28"]     C --&gt; F["39.3 n=4"]   </pre>
Relative' (ArrayD→ArrayB)	Relative Fitness (ArrayA→ArrayB) QDEP_RD > 14.7?
<pre> graph TD     A["BW &gt; 108.0?"] --&gt; B["BW &gt; 101.0?"]     B --&gt; C["88.9 n=3"]     B --&gt; D["3.2 n=28"]     C --&gt; E["3.2 n=28"]     C --&gt; F["39.3 n=4"]   </pre>	<pre> graph TD     A["QDEP_RD &gt; 14.7?"] --&gt; B["LAT &gt; 1.4?"]     B --&gt; C["1.5 n=6"]     B --&gt; D["0.2 n=7"]     C --&gt; E["0.2 n=7"]     C --&gt; F["QDEP_RD &gt; 6.6?"]     F --&gt; G["0.7 n=14"]     F --&gt; H["0.9 n=8"]   </pre>
Relative Fitness (ArrayC→ArrayB) LAT > 16.7?	Relative Fitness (ArrayD→ArrayB) LAT > 3.0?
<pre> graph TD     A["LAT &gt; 16.7?"] --&gt; B["LAT &gt; 3.0?"]     B --&gt; C["2.5 n=9"]     B --&gt; D["0.1 n=14"]     C --&gt; E["0.1 n=14"]     C --&gt; F["BW &gt; 105.2?"]     F --&gt; G["0.4 n=3"]     F --&gt; H["1.0 n=9"]   </pre>	<pre> graph TD     A["LAT &gt; 3.0?"] --&gt; B["BW &gt; 101.0?"]     B --&gt; C["0.4 n=4"]     B --&gt; D["0.1 n=6"]     C --&gt; E["0.1 n=6"]     C --&gt; F["QDEP_RD &gt; 2.4?"]     F --&gt; G["0.8 n=6"]     F --&gt; H["RDSZ &gt; 48.0?"]     G --&gt; I["0.8 n=6"]     G --&gt; J["0.7 n=10"]     H --&gt; K["0.7 n=10"]     H --&gt; L["0.9 n=2"]   </pre>

Table D.2: Bandwidth models of ArrayB.

Absolute (ArrayC→ArrayC) JMP_RD > 1827.5?	Relative (ArrayA→ArrayC) JMP_RD > 1843.5?
<pre> graph TD     A["JMP_RD &gt; 1827.5?"] --&gt; B["RDSZ &gt; 12.0?"]     A --&gt; C["1.8 n=15"]     B --&gt; D["27.3 n=12"]     B --&gt; E["107.3 n=8"]     C --&gt; F["27.3 n=12"]     C --&gt; G["107.3 n=8"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 1843.5?"] --&gt; B["RDSZ &gt; 12.0?"]     A --&gt; C["1.8 n=15"]     B --&gt; D["27.3 n=12"]     B --&gt; E["107.3 n=8"]     C --&gt; F["27.3 n=12"]     C --&gt; G["107.3 n=8"]   </pre>
Relative (ArrayB→ArrayC) JMP_RD > 1823.0?	Relative (ArrayD→ArrayC) JMP_RD > 1840.0?
<pre> graph TD     A["JMP_RD &gt; 1823.0?"] --&gt; B["RDSZ &gt; 12.0?"]     A --&gt; C["1.8 n=15"]     B --&gt; D["27.3 n=12"]     B --&gt; E["107.3 n=8"]     C --&gt; F["27.3 n=12"]     C --&gt; G["107.3 n=8"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 1840.0?"] --&gt; B["RDSZ &gt; 12.0?"]     A --&gt; C["1.8 n=15"]     B --&gt; D["27.3 n=12"]     B --&gt; E["107.3 n=8"]     C --&gt; F["27.3 n=12"]     C --&gt; G["107.3 n=8"]   </pre>
Relative' (ArrayA→ArrayC)	Relative' (ArrayB→ArrayC) BW > 23.1?
<pre> graph TD     A["BW &gt; 25.6?"] --&gt; B["JMP_RD &gt; 1843.5?"]     A --&gt; C["107.3 n=8"]     B --&gt; D["27.3 n=12"]     B --&gt; E["1.8 n=15"]     C --&gt; F["27.3 n=12"]     C --&gt; G["1.8 n=15"]   </pre>	<pre> graph TD     A["BW &gt; 23.1?"] --&gt; B["JMP_RD &gt; 1823.0?"]     A --&gt; C["107.3 n=7"]     B --&gt; D["16.1 n=7"]     B --&gt; E["49.9 n=6"]     C --&gt; F["1.8 n=15"]     C --&gt; G["27.3 n=8"]   </pre>
Relative' (ArrayD→ArrayC) BW > 68.6?	Relative Fitness (ArrayA→ArrayC) JMP_RD > 4.5?
<pre> graph TD     A["BW &gt; 68.6?"] --&gt; B["BW &gt; 37.2?"]     A --&gt; C["106.8 n=9"]     B --&gt; D["IOPS &gt; 15258.5?"]     B --&gt; E["48.5 n=4"]     D --&gt; F["2.1 n=19"]     D --&gt; G["25.2 n=3"]     C --&gt; H["27.3 n=12"]     C --&gt; I["1.8 n=15"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 4.5?"] --&gt; B["11.8 n=3"]     A --&gt; C["JMP_RD &gt; 1843.5?"]     C --&gt; D["QDEP_RD &gt; 2.8?"]     C --&gt; E["RDSZ &gt; 6.0?"]     D --&gt; F["1.9 n=6"]     D --&gt; G["3.8 n=11"]     E --&gt; H["0.7 n=6"]     E --&gt; I["0.3 n=9"]     B --&gt; J["27.3 n=12"]     B --&gt; K["1.8 n=15"]   </pre>
Relative Fitness (ArrayB→ArrayC) LAT > 5.3?	Relative Fitness (ArrayD→ArrayC) JMP_RD > 1840.0?
<pre> graph TD     A["LAT &gt; 5.3?"] --&gt; B["BW &gt; 2.6?"]     A --&gt; C["0.7 n=19"]     B --&gt; D["13.1 n=6"]     B --&gt; E["7.3 n=7"]     C --&gt; F["3.3 n=3"]     D --&gt; G["27.3 n=12"]     D --&gt; H["1.8 n=15"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 1840.0?"] --&gt; B["RDSZ &gt; 12.0?"]     A --&gt; C["BW &gt; 3.3?"]     B --&gt; D["0.7 n=3"]     B --&gt; E["0.9 n=9"]     C --&gt; F["1.0 n=8"]     C --&gt; G["0.7 n=6"]     C --&gt; H["0.3 n=9"]     D --&gt; I["27.3 n=12"]     D --&gt; J["1.8 n=15"]   </pre>

Table D.3: Bandwidth models of ArrayC.

Absolute (ArrayD→ArrayD) JMP_RD > 1840.0?	Relative (ArrayA→ArrayD) JMP_RD > 1843.5?
Relative (ArrayB→ArrayD) JMP_RD > 1823.0?	Relative (ArrayC→ArrayD) JMP_RD > 1827.5?
Relative' (ArrayA→ArrayD) BW > 25.6?	Relative' (ArrayB→ArrayD) BW > 23.1?
Relative' (ArrayC→ArrayD) BW > 45.5?	Relative Fitness (ArrayA→ArrayD)
Relative Fitness (ArrayB→ArrayD) LAT > 5.3?	Relative Fitness (ArrayC→ArrayD) LAT > 36.7?

Table D.4: Bandwidth models of ArrayD.

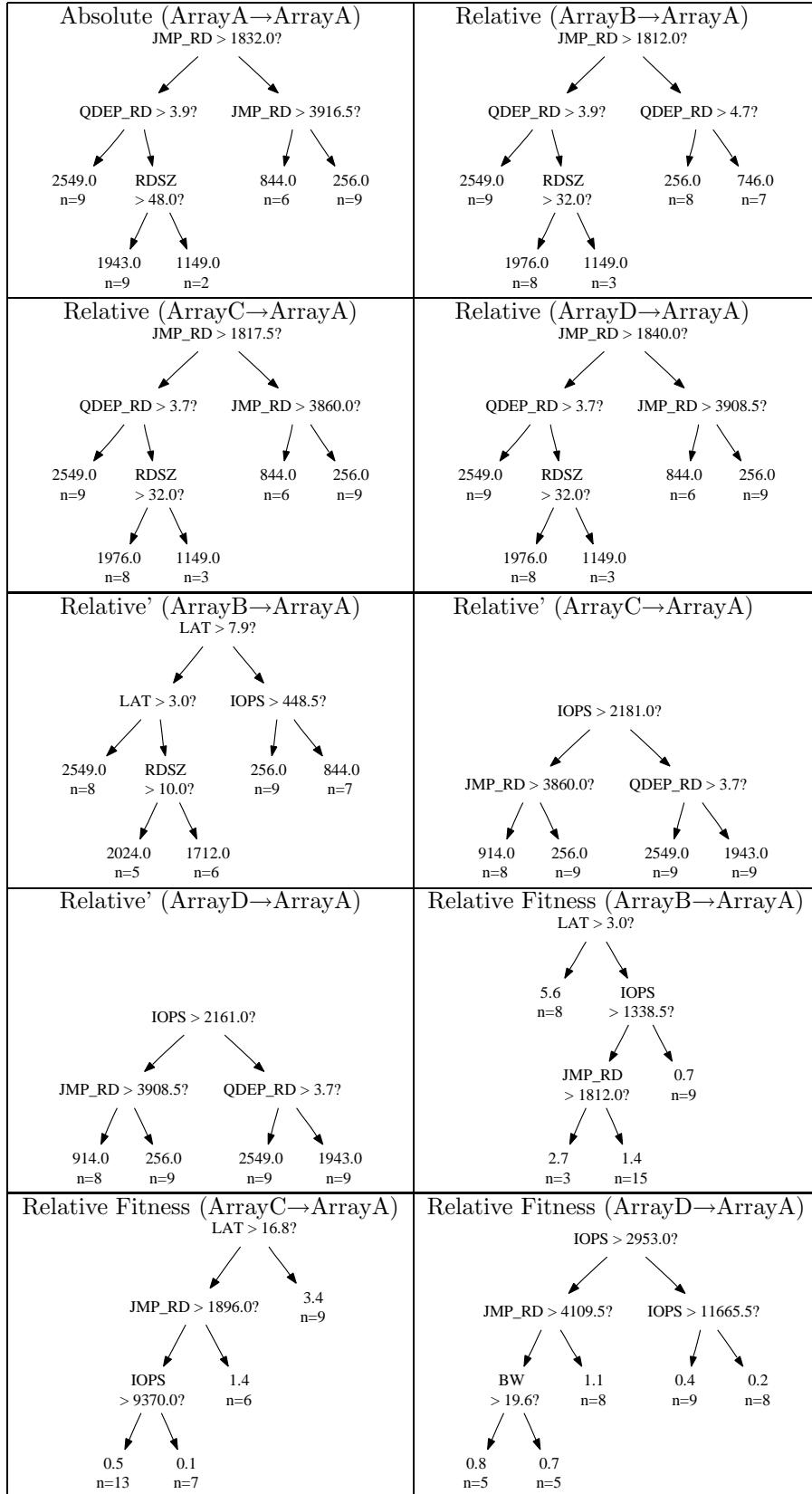


Table D.5: Throughput models of ArrayA.

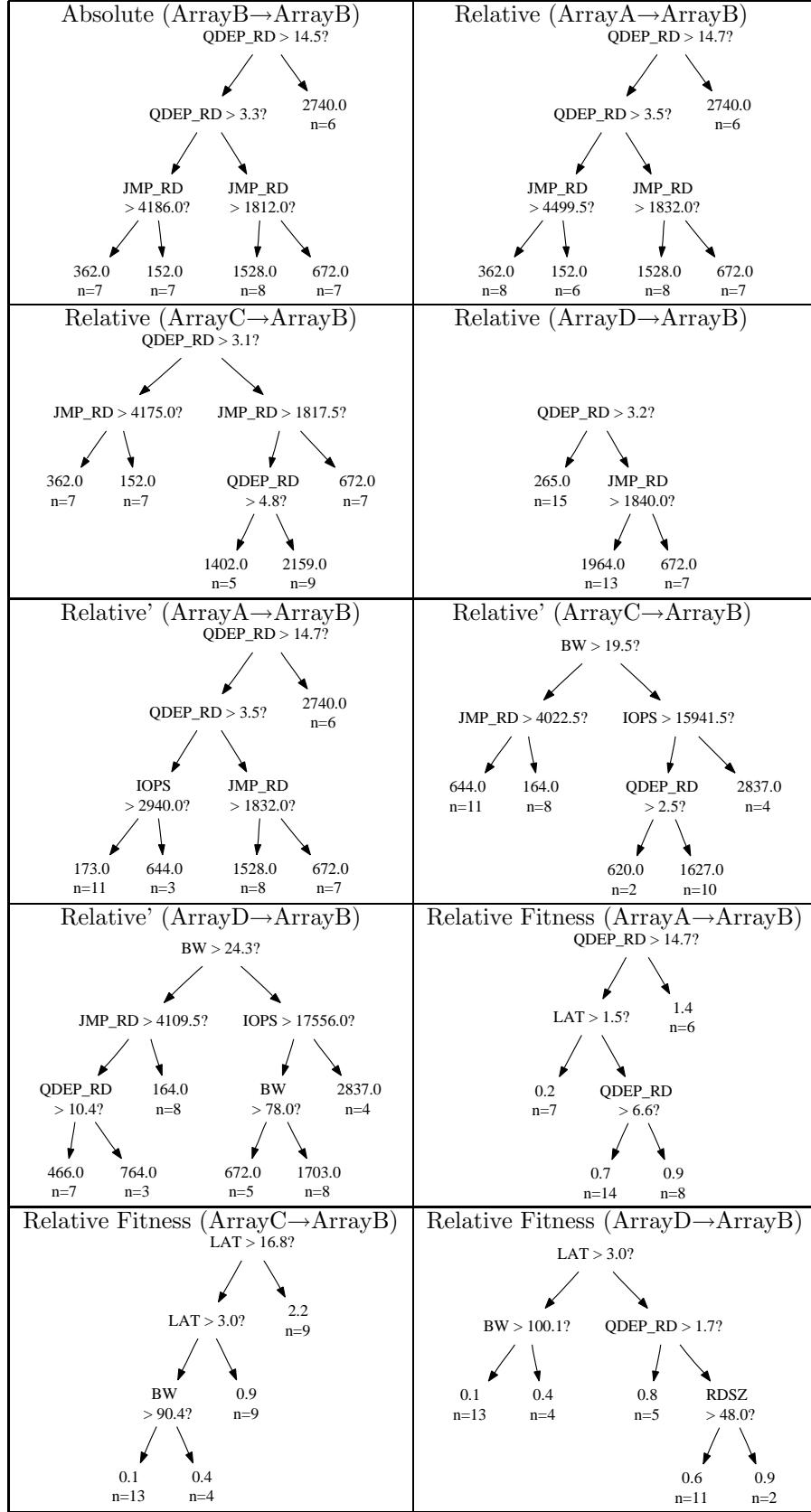


Table D.6: Throughput models of ArrayB.

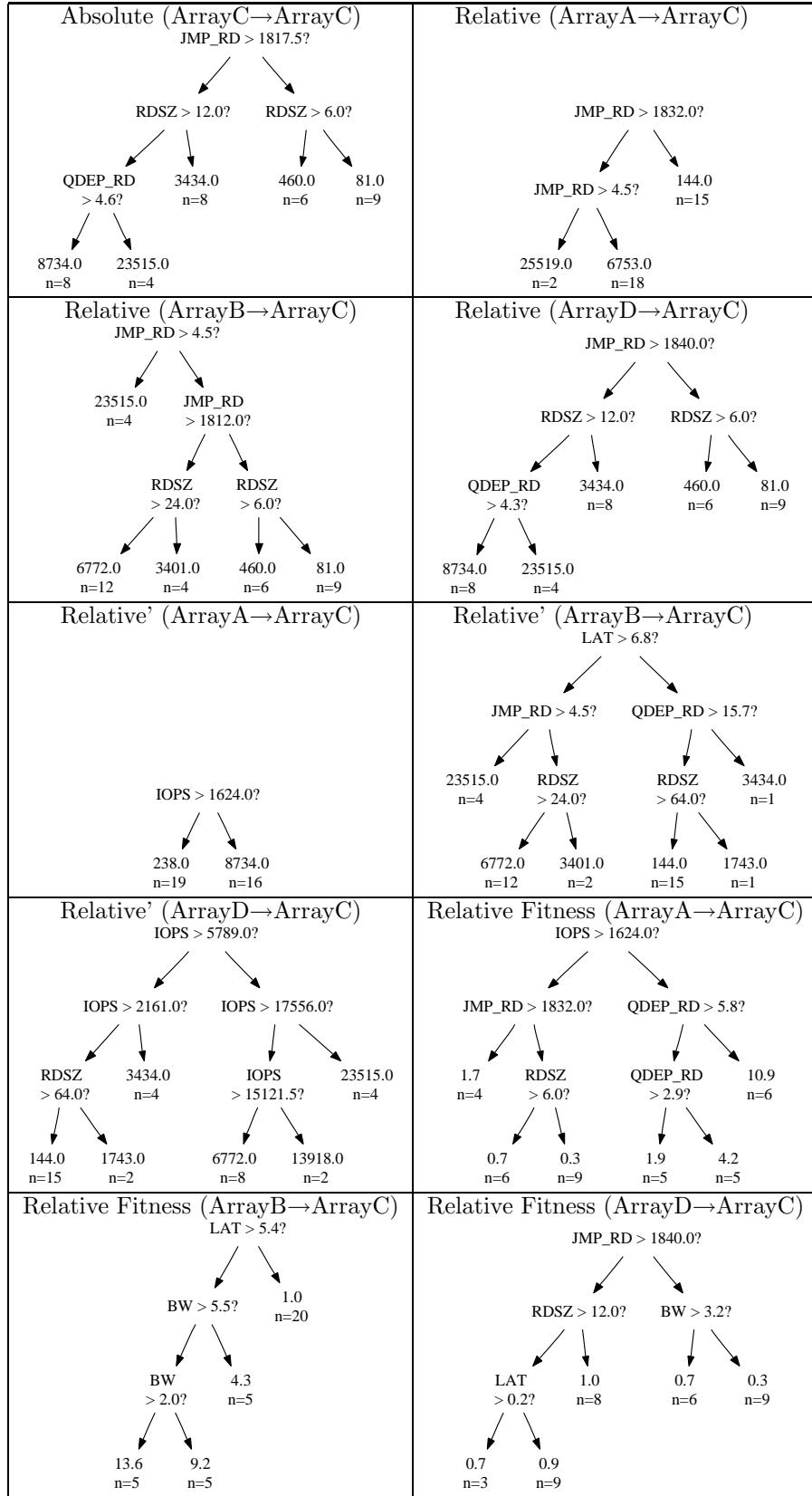


Table D.7: Throughput models of ArrayC.

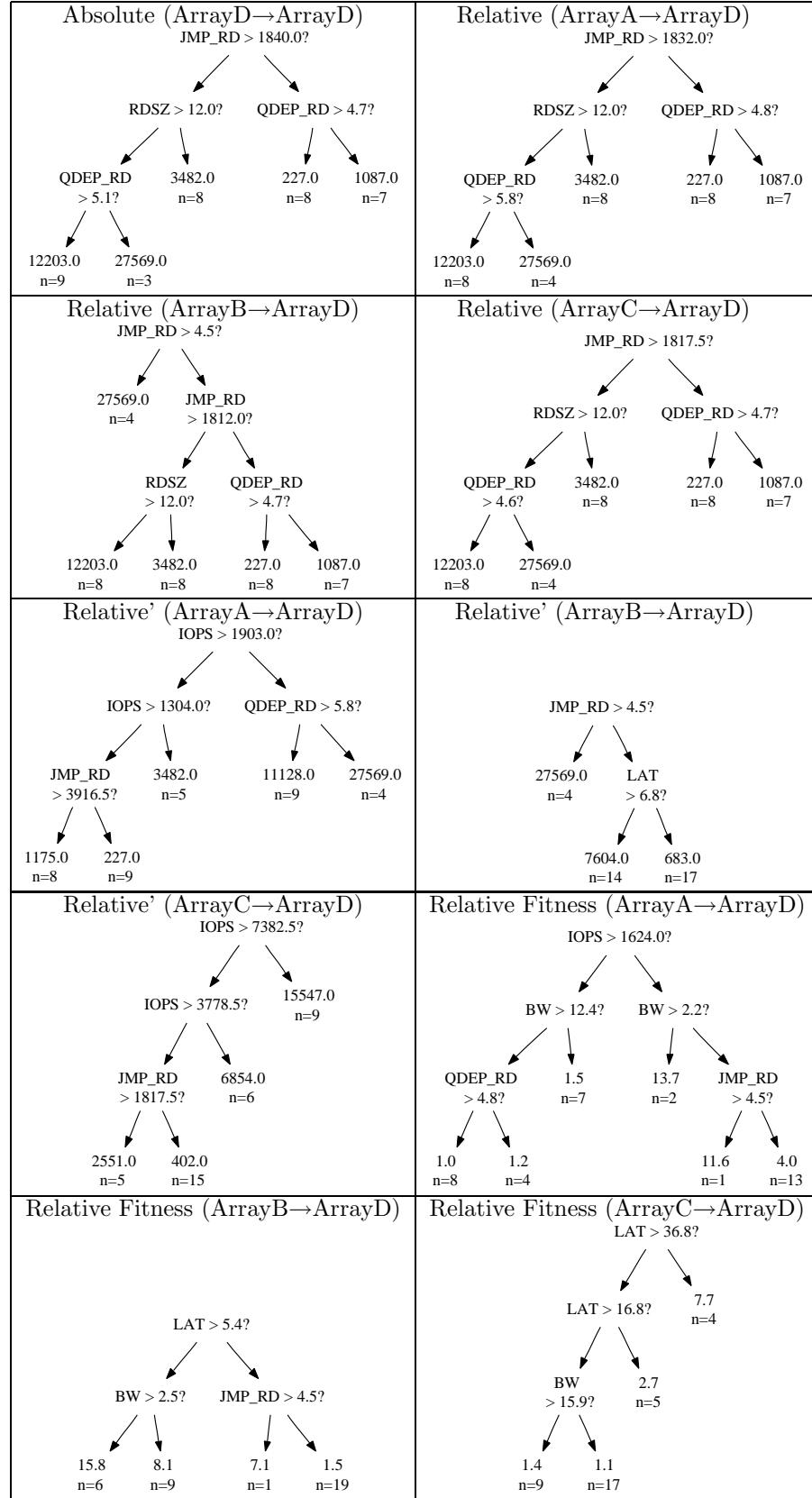


Table D.8: Throughput models of ArrayD.

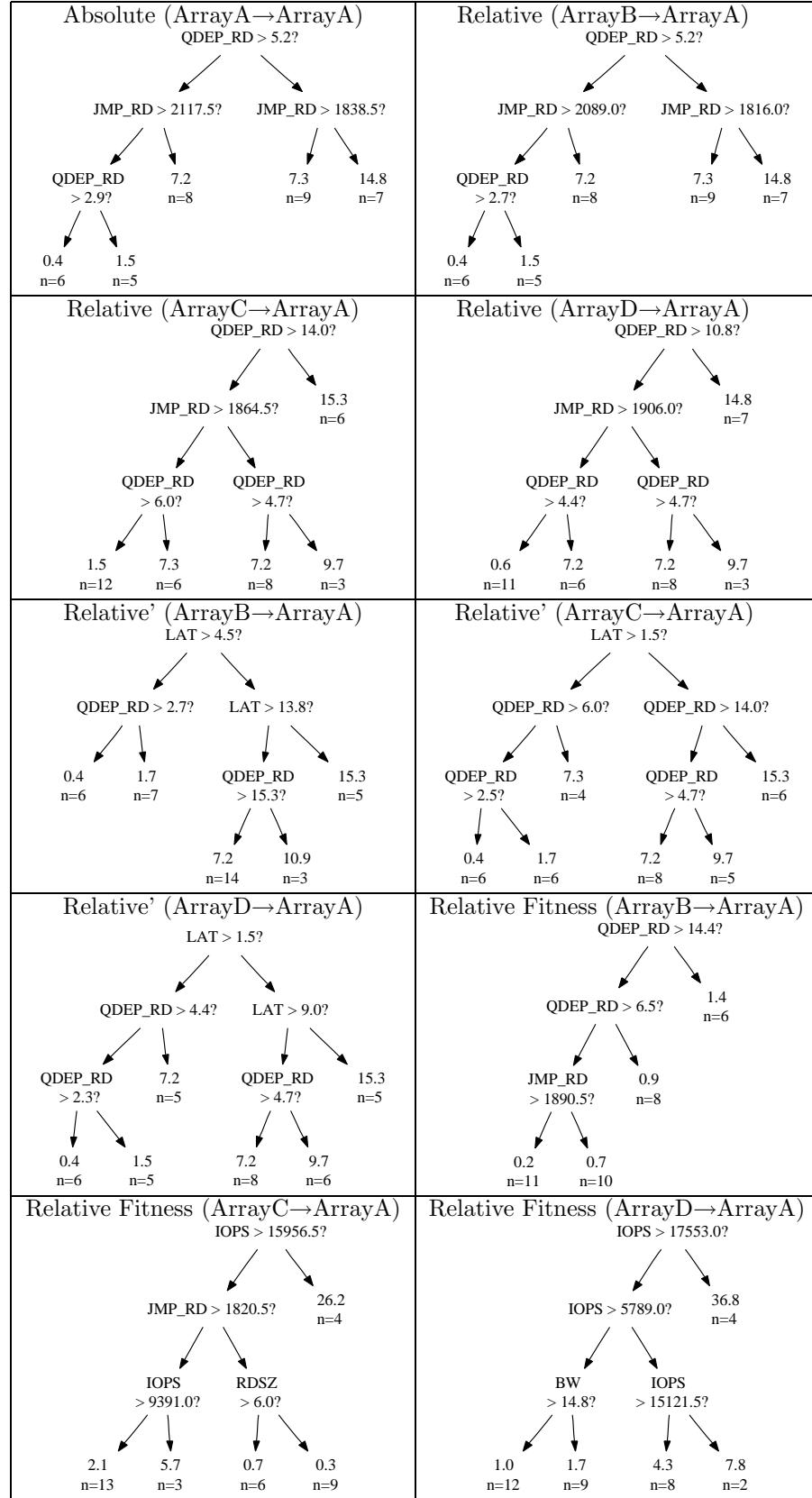


Table D.9: Latency models of ArrayA.

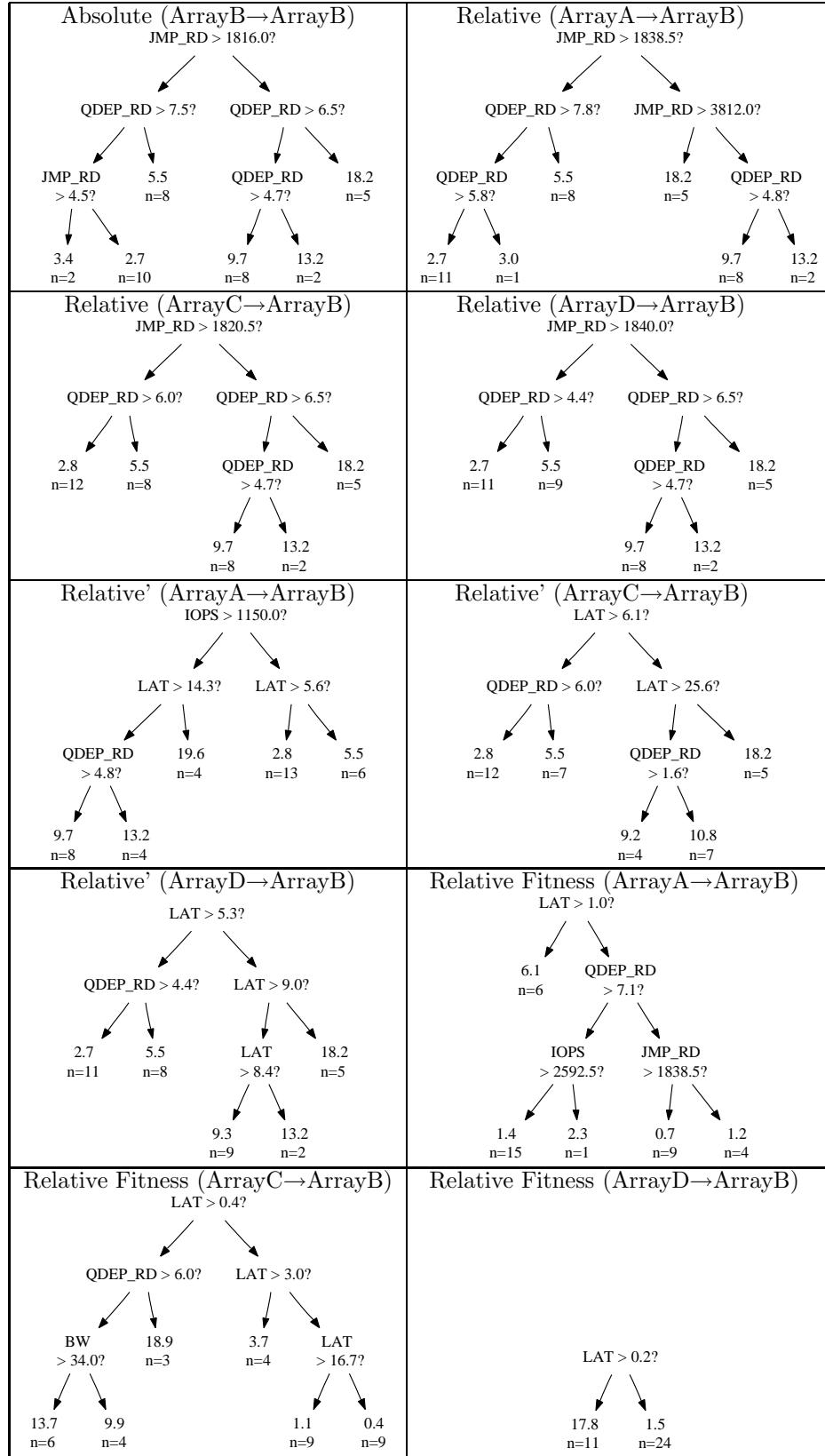


Table D.10: Latency models of ArrayB.

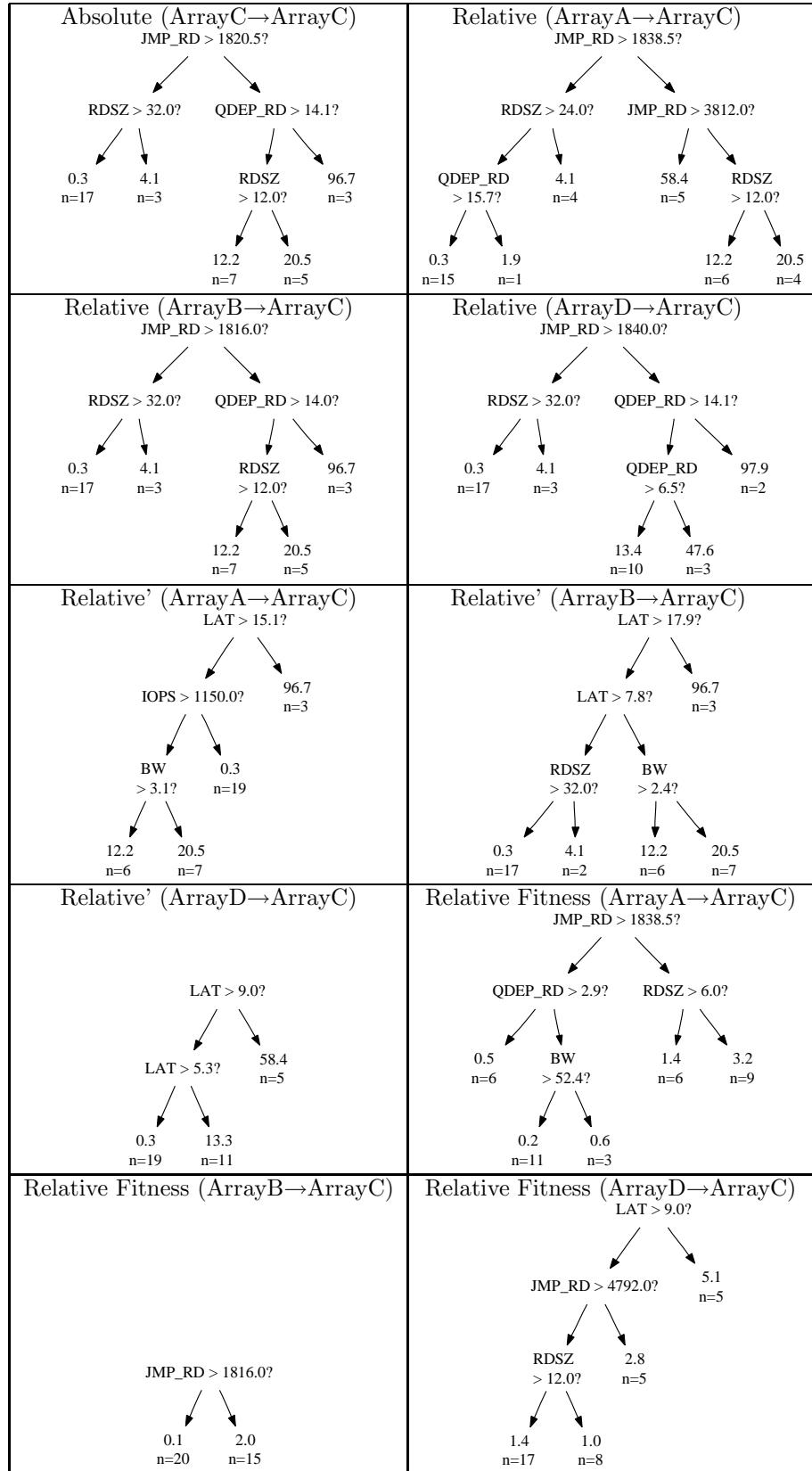


Table D.11: Latency models of ArrayC.

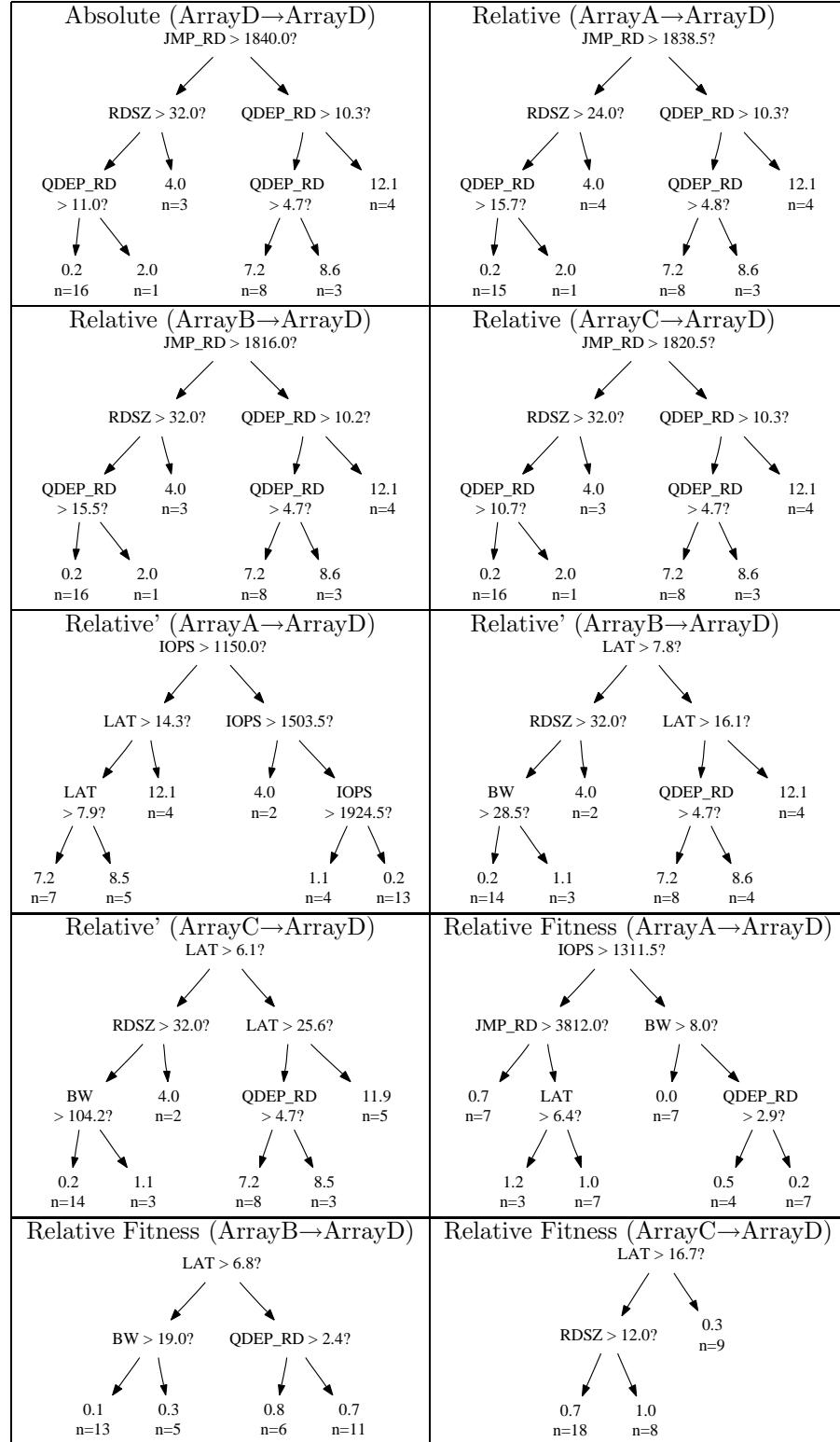


Table D.12: Latency models of ArrayD.



## **Appendix E**

### **Postmark models**

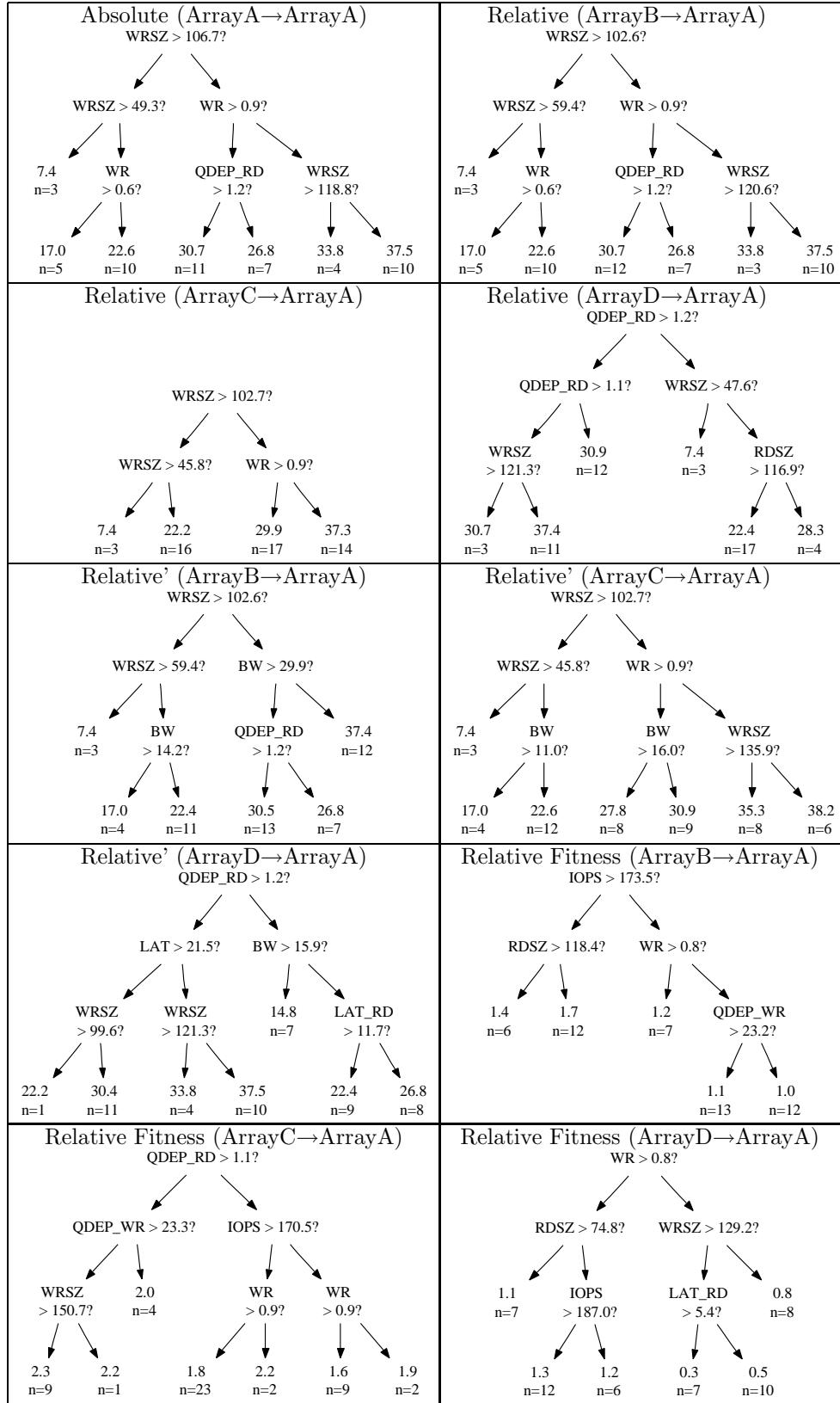


Table E.1: Bandwidth models of ArrayA.

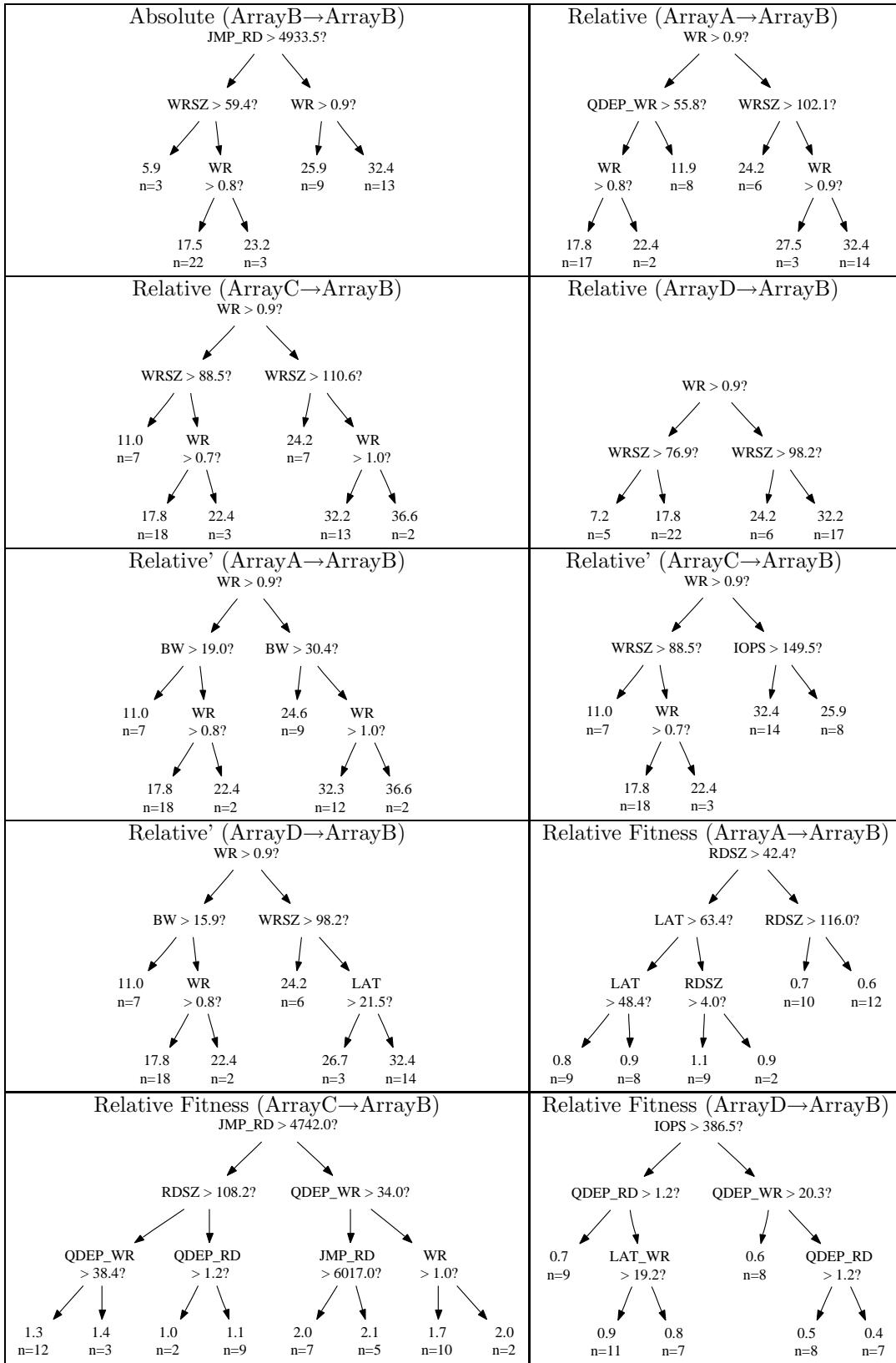


Table E.2: Bandwidth models of ArrayB.

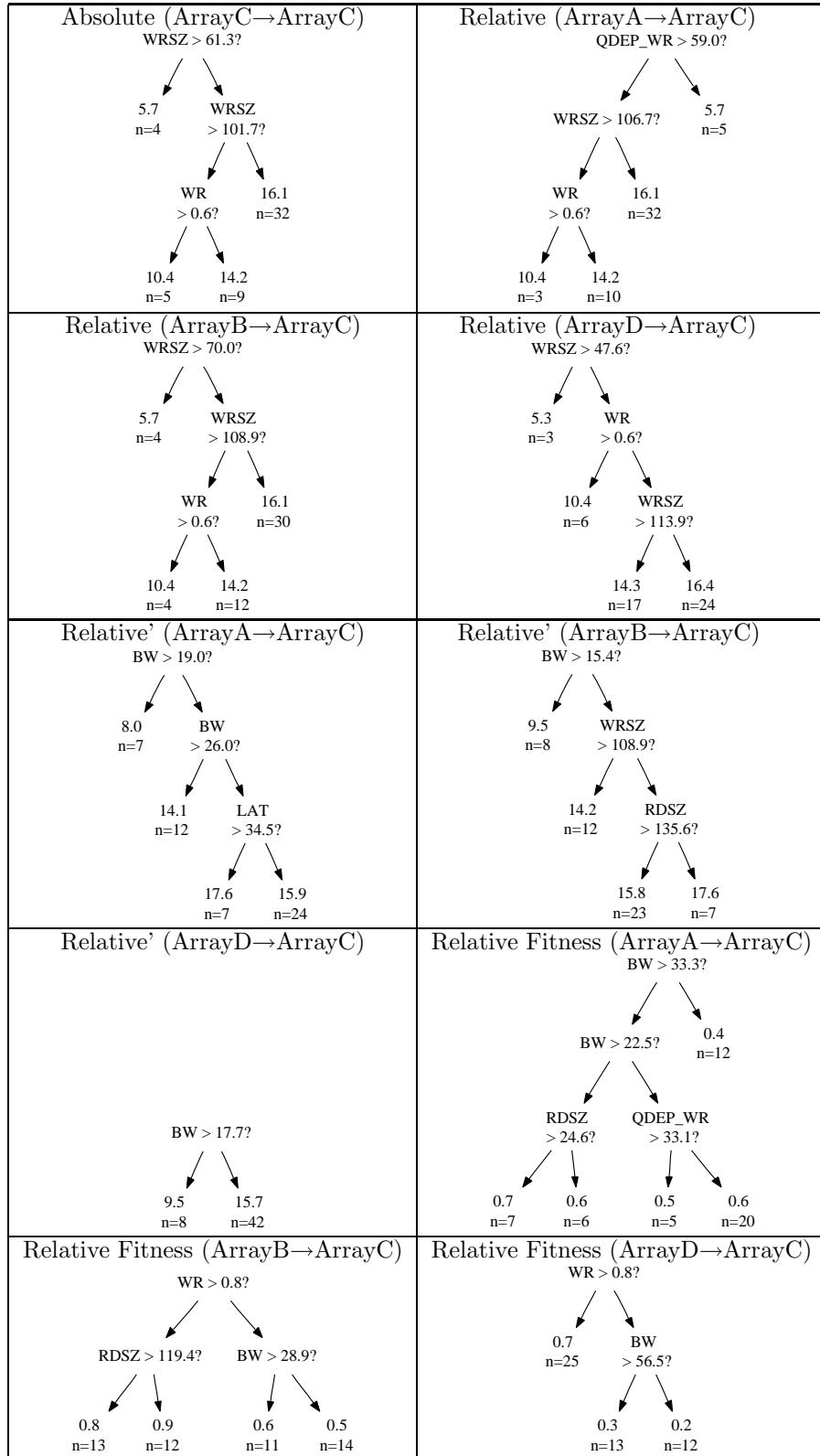


Table E.3: Bandwidth models of ArrayC.

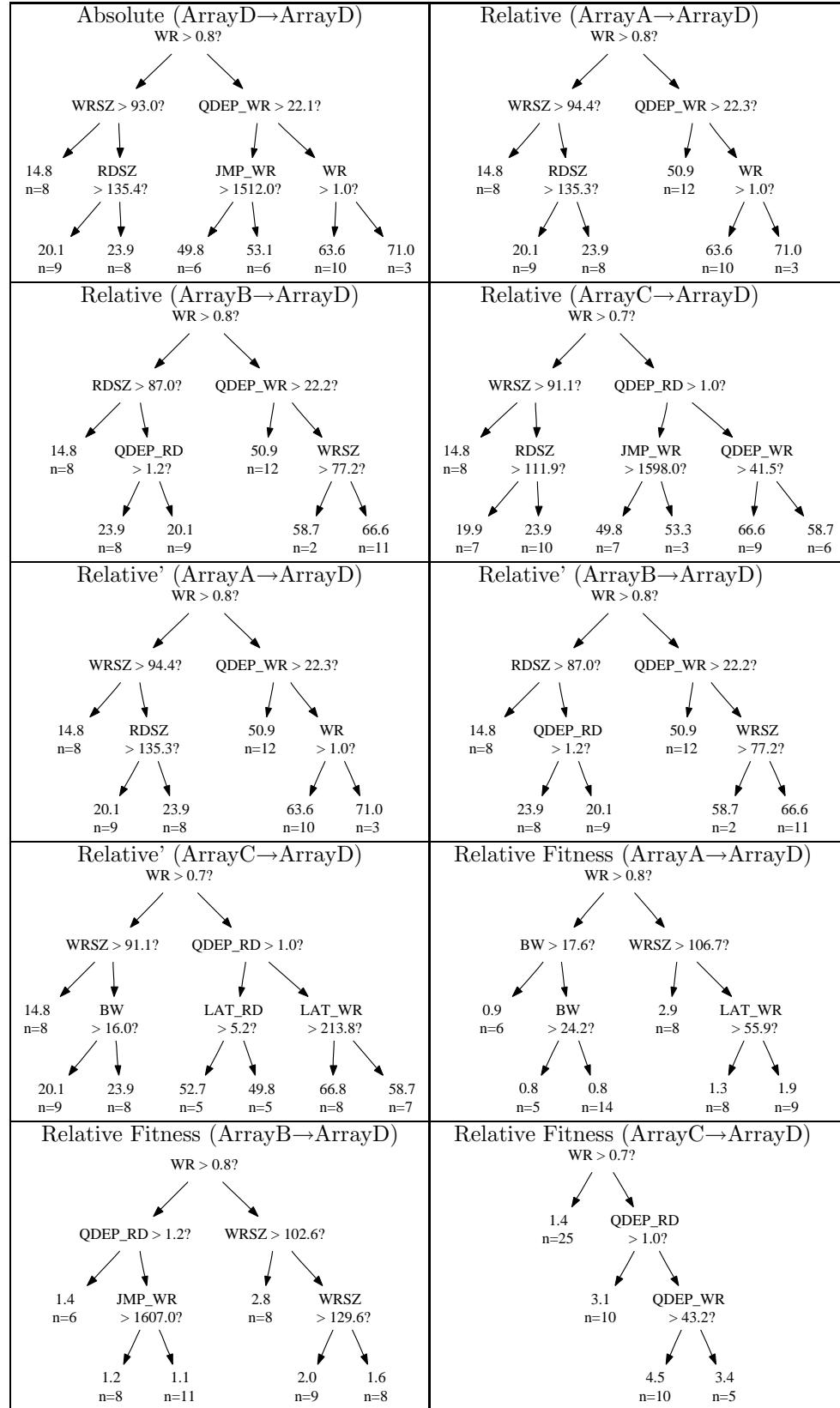


Table E.4: Bandwidth models of ArrayD.

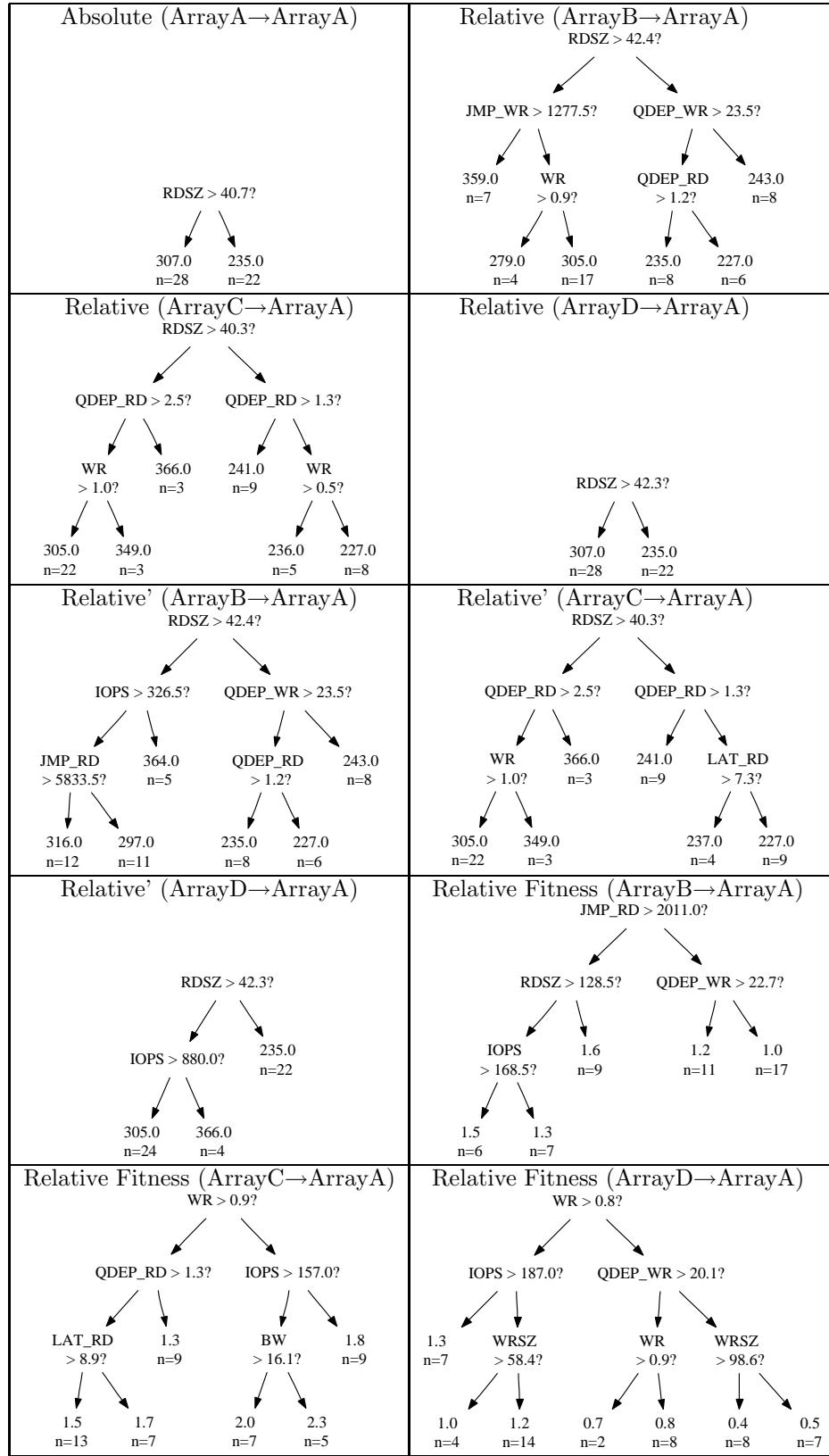


Table E.5: Throughput models of ArrayA.

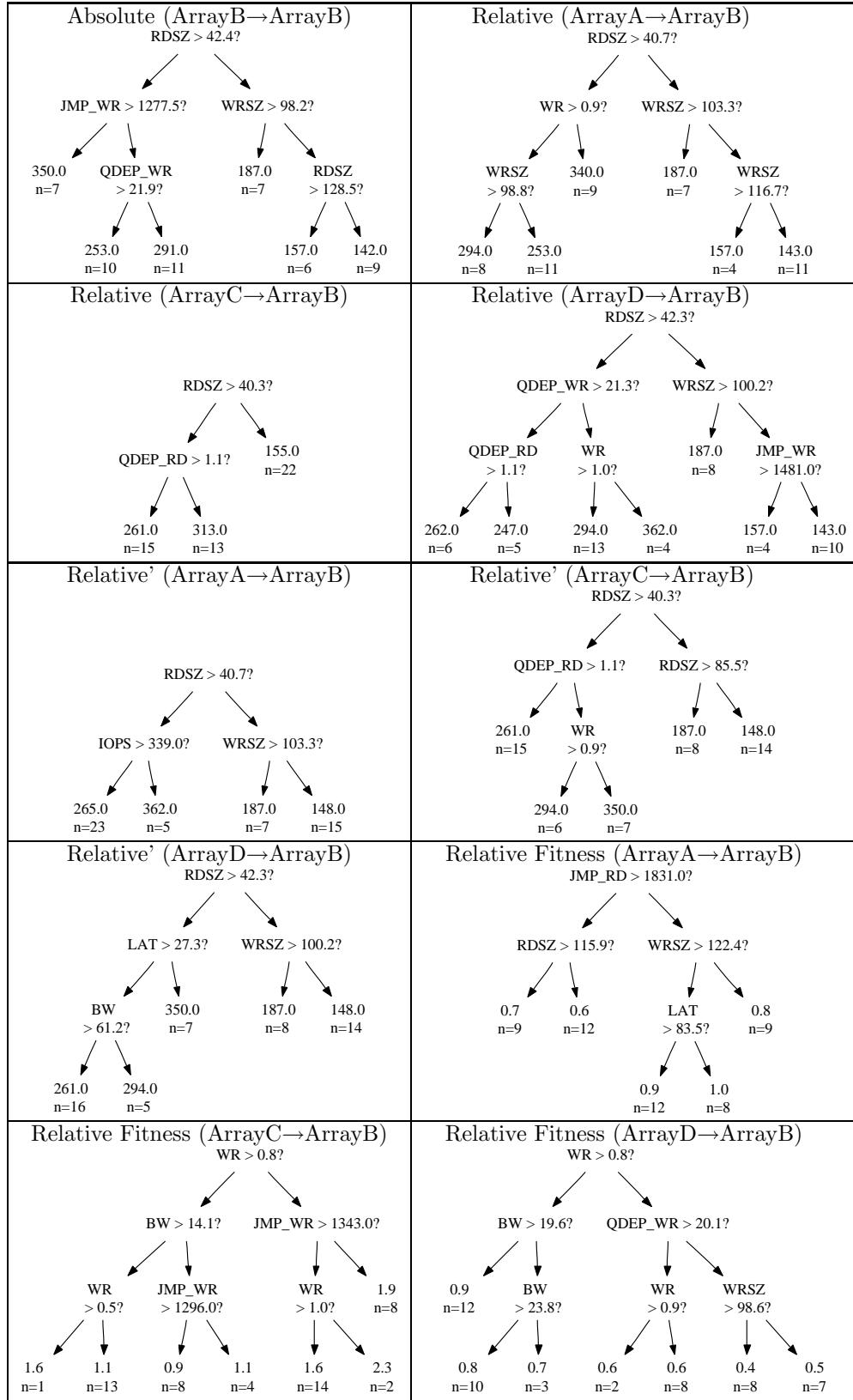


Table E.6: Throughput models of ArrayB.

Absolute (ArrayC→ArrayC) JMP_WR > 630.5?	Relative (ArrayA→ArrayC)
<pre> graph TD     A["JMP_WR &gt; 630.5?"] --&gt; B["WRSZ &gt; 115.4?"]     B --&gt; C["QDEP_RD &gt; 1.4?"]     B --&gt; D["QDEP_WR &gt; 20.9?"]     C --&gt; E["158.0 n=6"]     C --&gt; F["180.0 n=5"]     D --&gt; G["133.0 n=6"]     D --&gt; H["145.0 n=4"]   </pre>	<pre> graph TD     A["JMP_WR &gt; 1199.5?"] --&gt; B["WRSZ &gt; 130.7?"]     B --&gt; C["158.0 n=7"]     B --&gt; D["139.0 n=11"]   </pre>
Relative (ArrayB→ArrayC) QDEP_WR > 38.7?	Relative (ArrayD→ArrayC)
<pre> graph TD     A["QDEP_WR &gt; 38.7?"] --&gt; B["JMP_WR &gt; 1939.5?"]     B --&gt; C["218.0 n=7"]     B --&gt; D["QDEP_RD &gt; 1.1?"]     D --&gt; E["139.0 n=6"]     D --&gt; F["156.0 n=32"]     C --&gt; G["190.0 n=5"]   </pre>	<pre> graph TD     A["QDEP_WR &gt; 44.2?"] --&gt; B["156.0 n=44"]     B --&gt; C["219.0 n=6"]   </pre>
Relative' (ArrayA→ArrayC)	Relative' (ArrayB→ArrayC) QDEP_WR > 38.7?
<pre> graph TD     A["JMP_WR &gt; 1199.5?"] --&gt; B["218.0 n=7"]     A --&gt; C["155.0 n=43"]   </pre>	<pre> graph TD     A["QDEP_WR &gt; 38.7?"] --&gt; B["218.0 n=7"]     B --&gt; C["JMP_WR &gt; 1939.5?"]     C --&gt; D["190.0 n=5"]     C --&gt; E["QDEP_RD &gt; 1.1?"]     E --&gt; F["139.0 n=6"]     E --&gt; G["156.0 n=32"]   </pre>
Relative' (ArrayD→ArrayC) QDEP_WR > 44.2?	Relative Fitness (ArrayA→ArrayC)
<pre> graph TD     A["QDEP_WR &gt; 44.2?"] --&gt; B["IOPS &gt; 712.5?"]     B --&gt; C["219.0 n=6"]     B --&gt; D["WRSZ &gt; 135.8?"]     D --&gt; E["156.0 n=33"]     D --&gt; F["139.0 n=6"]     C --&gt; G["192.0 n=5"]   </pre>	<pre> graph TD     A["BW &gt; 33.3?"] --&gt; B["0.6 n=38"]     B --&gt; C["0.5 n=12"]   </pre>
Relative Fitness (ArrayB→ArrayC) JMP_RD > 2043.0?	Relative Fitness (ArrayD→ArrayC) WR > 0.8?
<pre> graph TD     A["JMP_RD &gt; 2043.0?"] --&gt; B["QDEP_RD &gt; 1.2?"]     A --&gt; C["BW &gt; 27.7?"]     B --&gt; D["1.1 n=13"]     B --&gt; E["0.9 n=10"]     C --&gt; F["0.6 n=13"]     C --&gt; G["0.5 n=14"]     D --&gt; H["0.6 n=13"]     D --&gt; I["0.5 n=14"]   </pre>	<pre> graph TD     A["WR &gt; 0.8?"] --&gt; B["0.8 n=25"]     B --&gt; C["QDEP_WR &gt; 22.1?"]     C --&gt; D["0.3 n=12"]     C --&gt; E["0.2 n=13"]   </pre>

Table E.7: Throughput models of ArrayC.

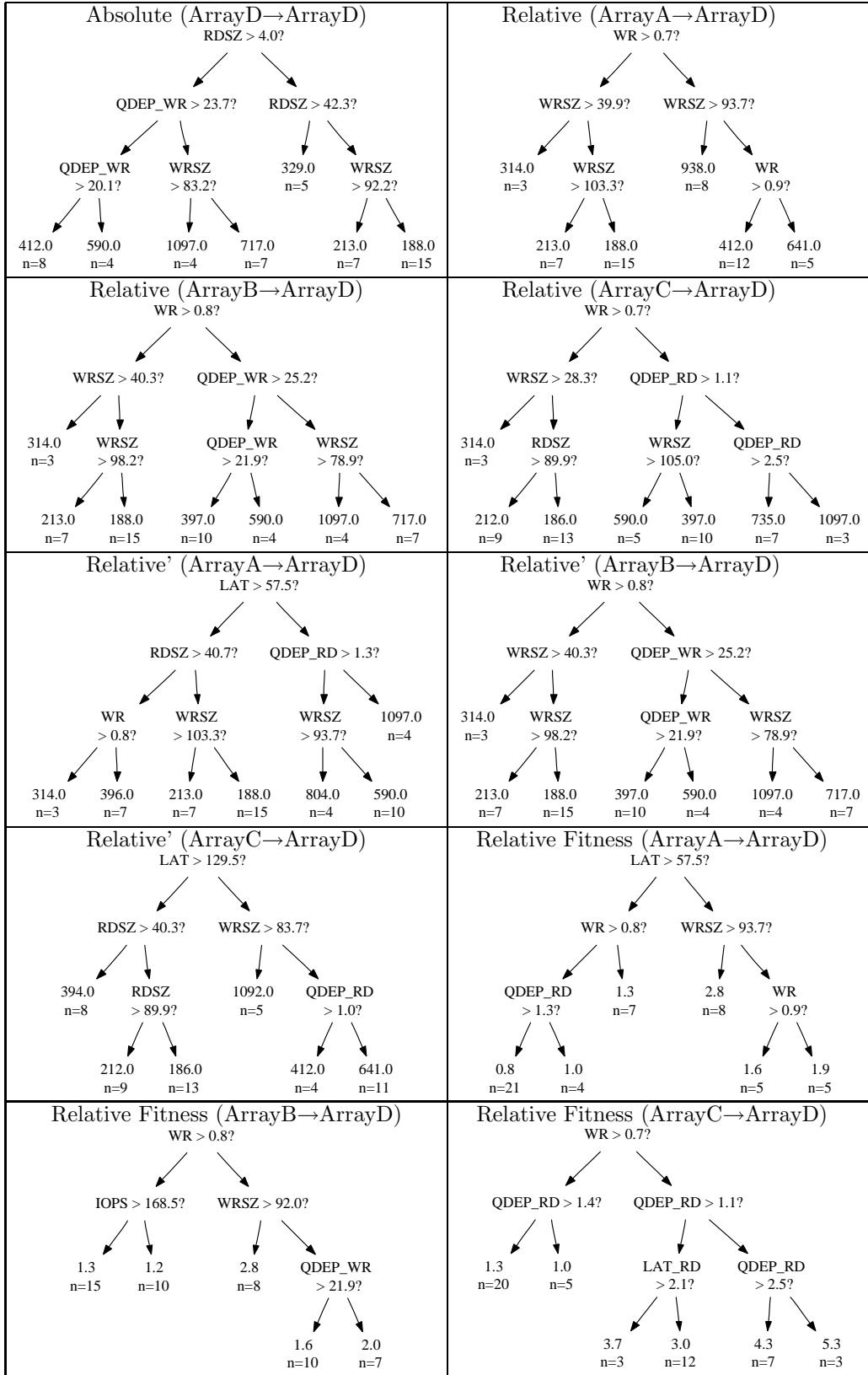


Table E.8: Throughput models of ArrayD.

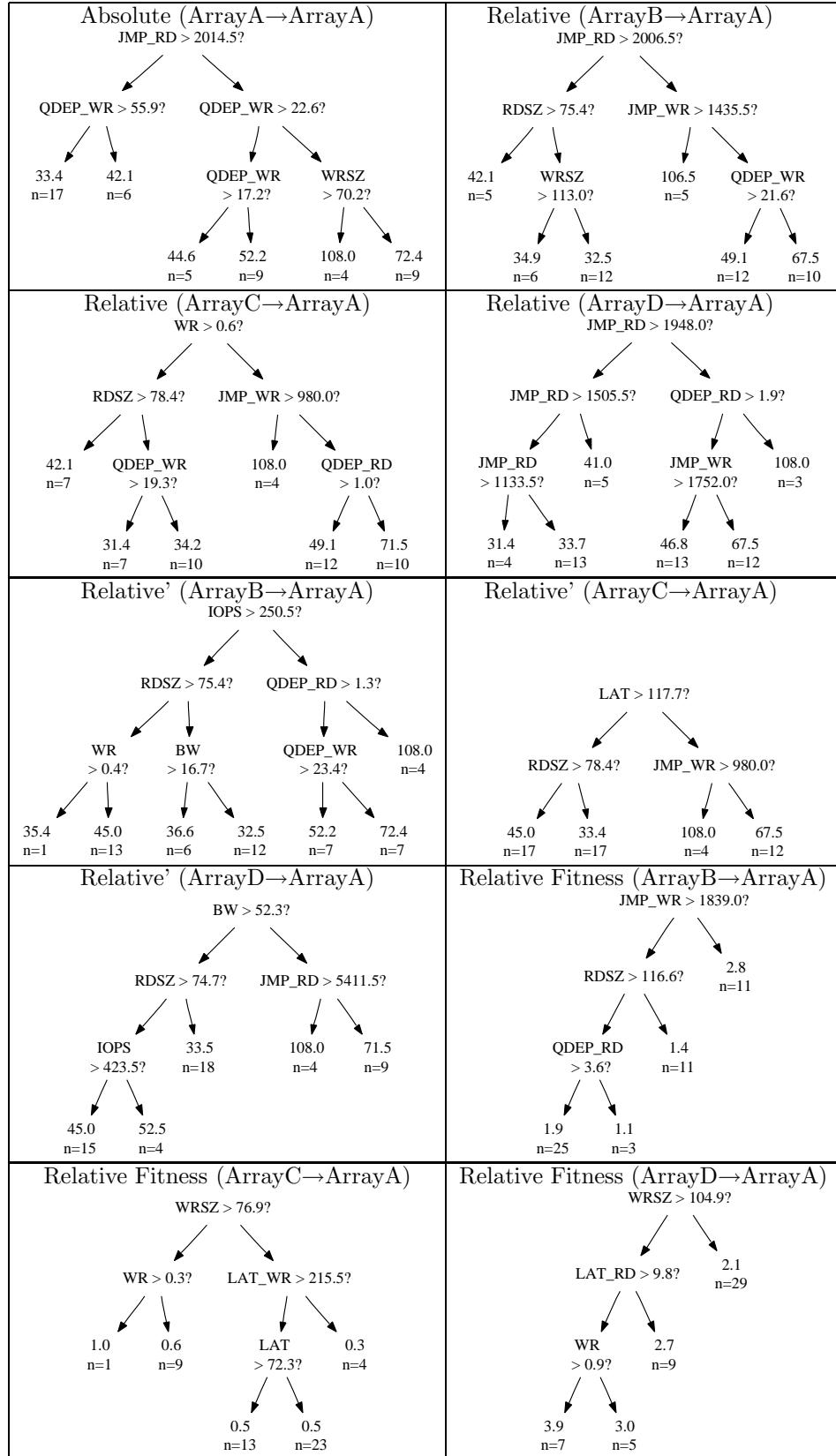


Table E.9: Latency models of ArrayA.

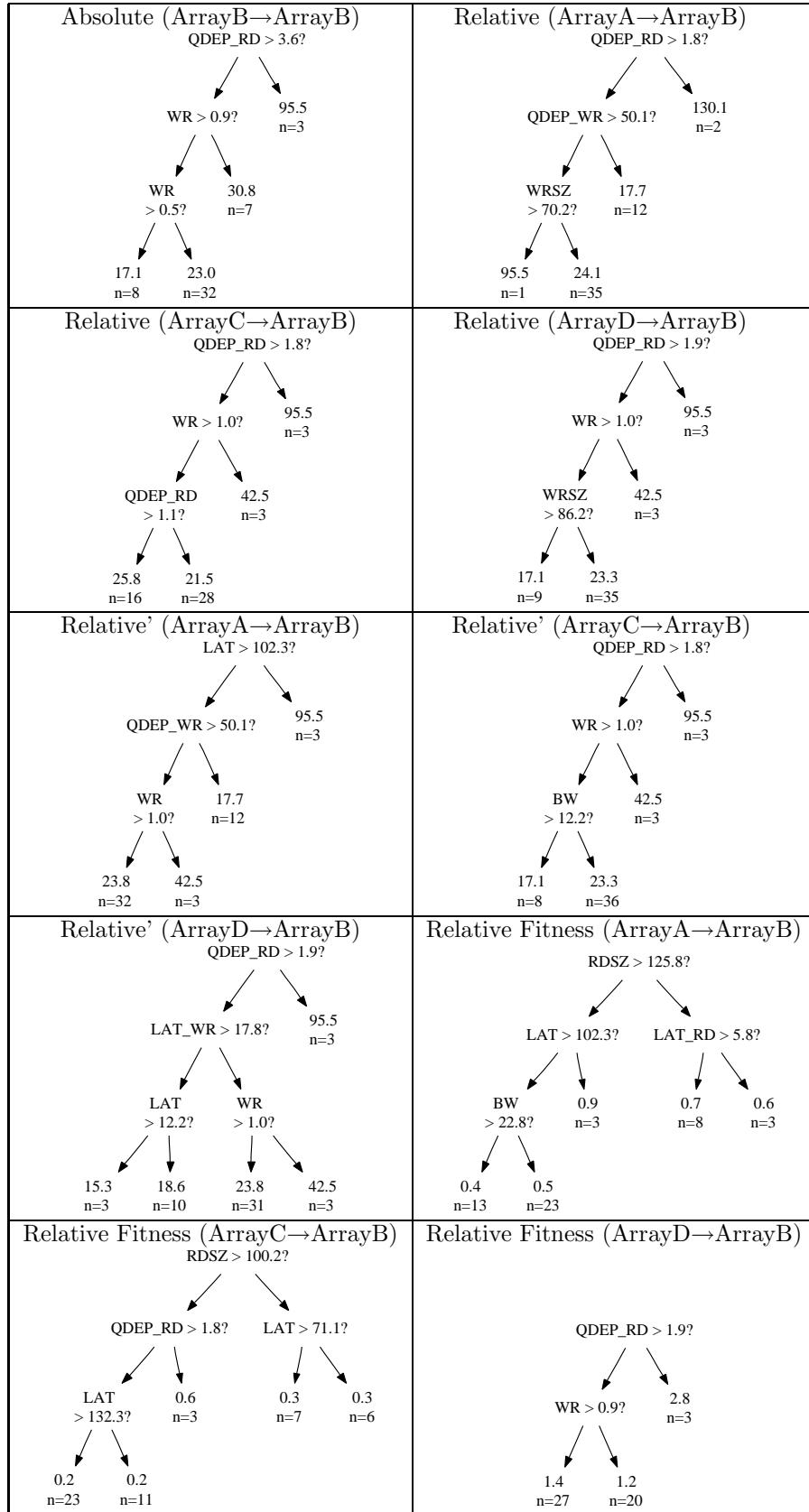


Table E.10: Latency models of ArrayB.

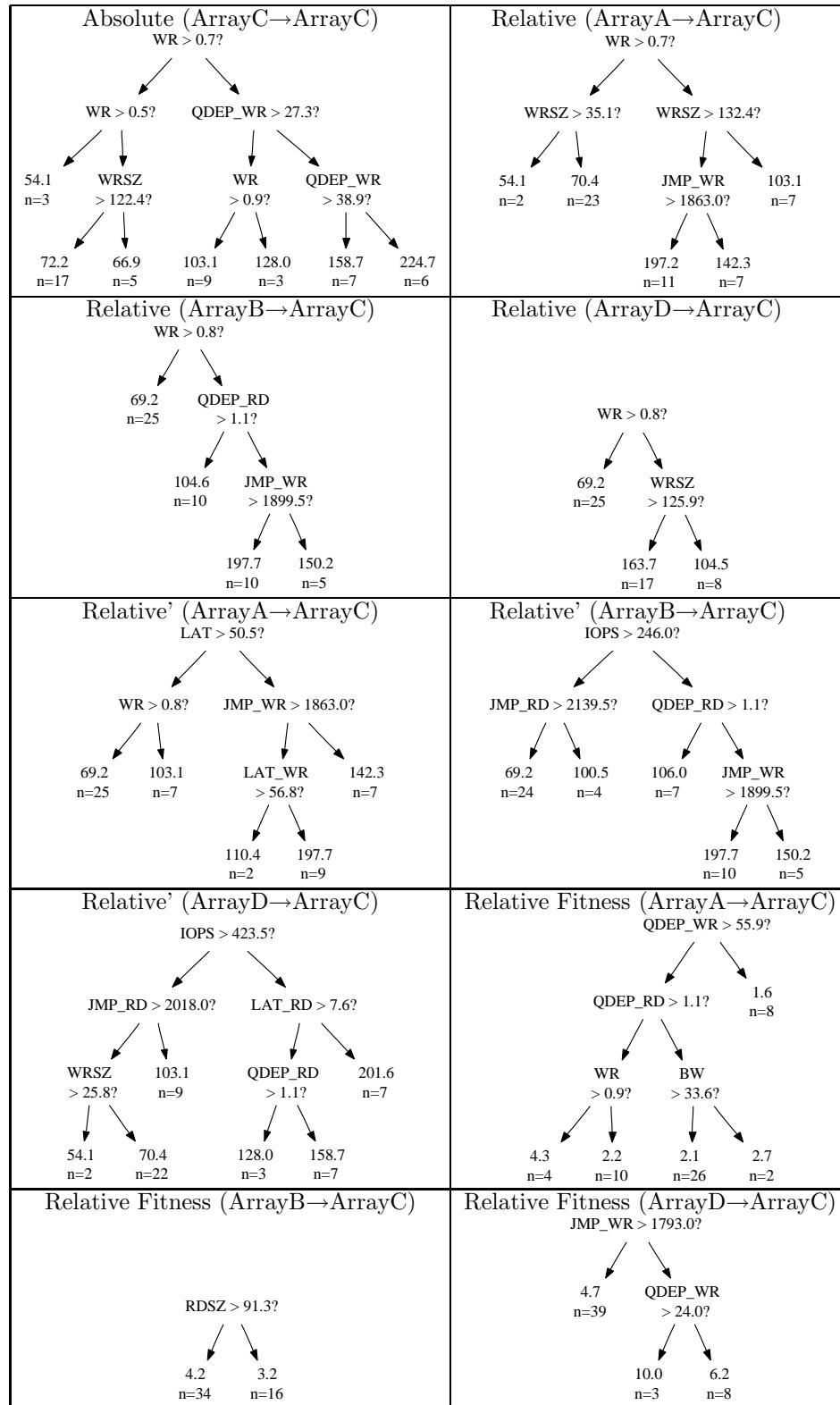


Table E.11: Latency models of ArrayC.

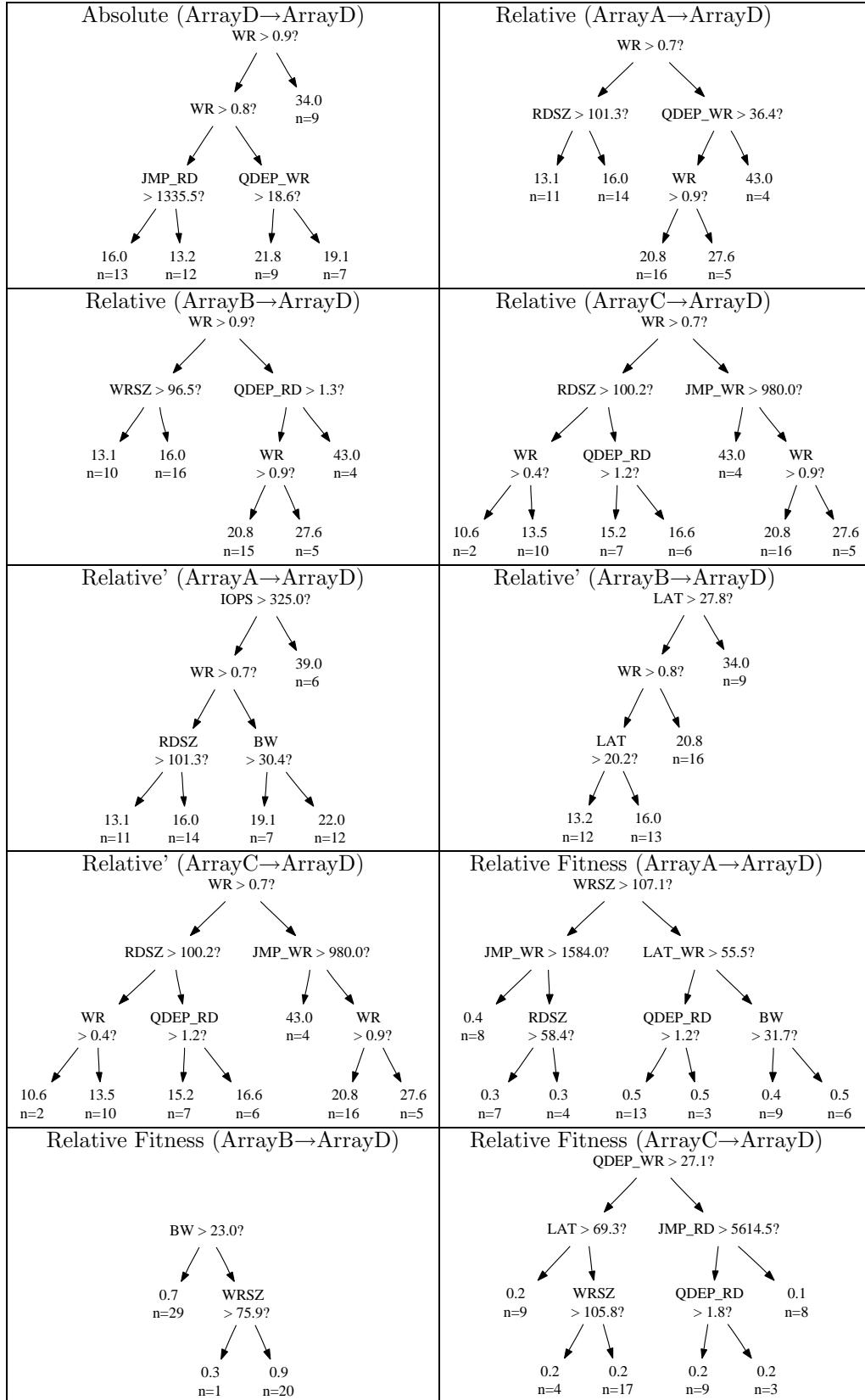


Table E.12: Latency models of ArrayD.



## **Appendix F**

### **Postmark models**

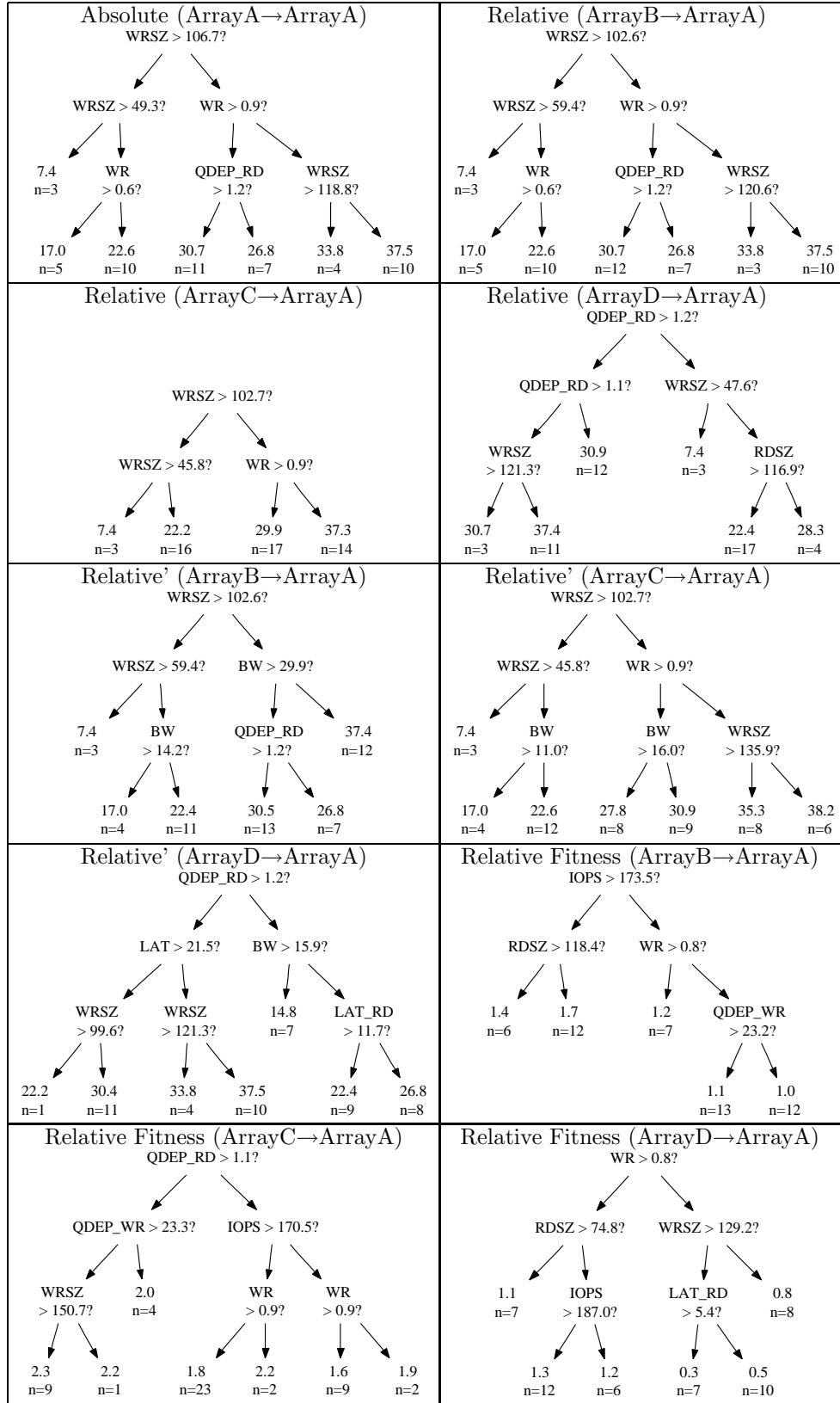


Table F.1: Bandwidth models of ArrayA.

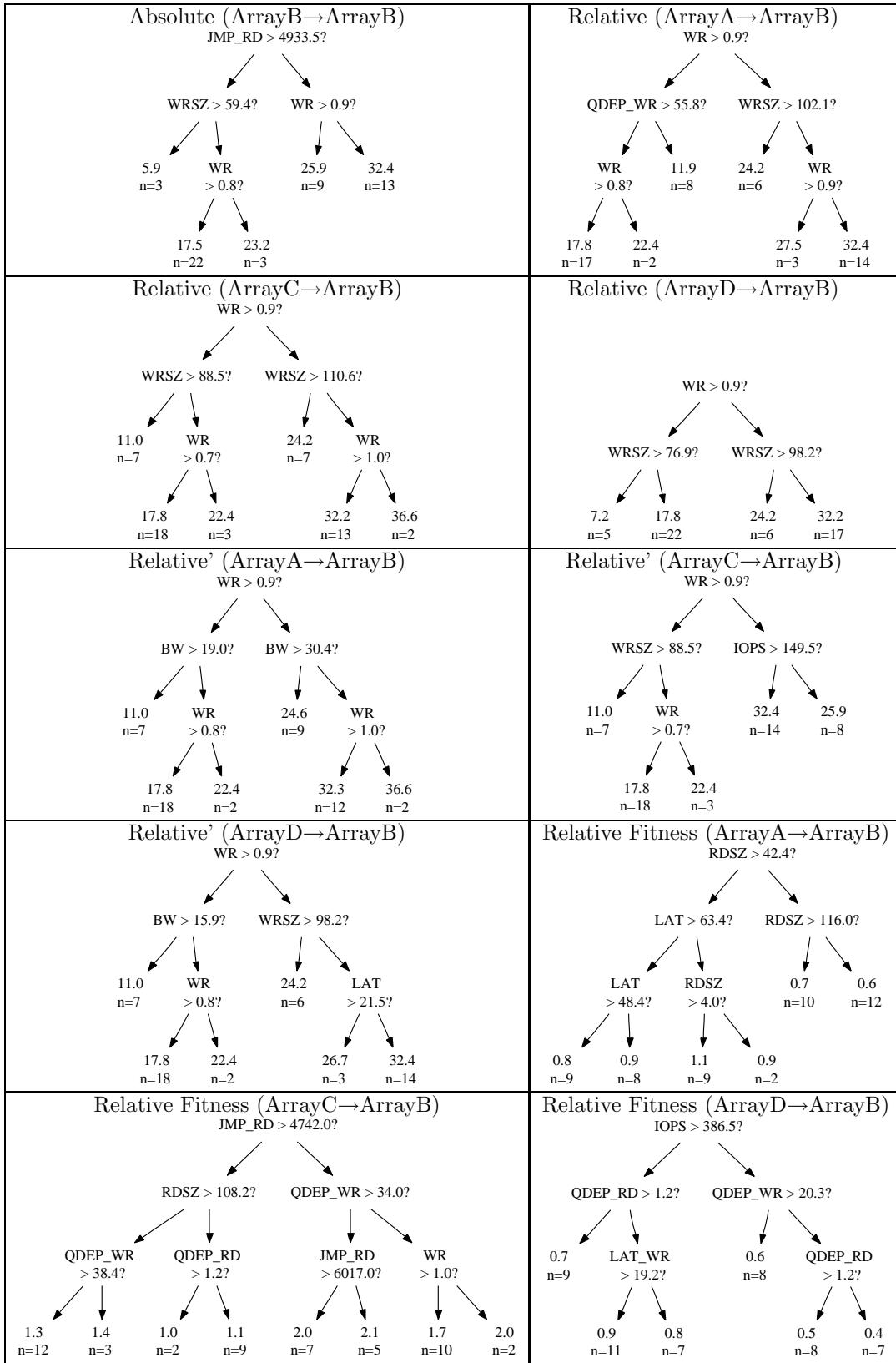


Table F.2: Bandwidth models of ArrayB.

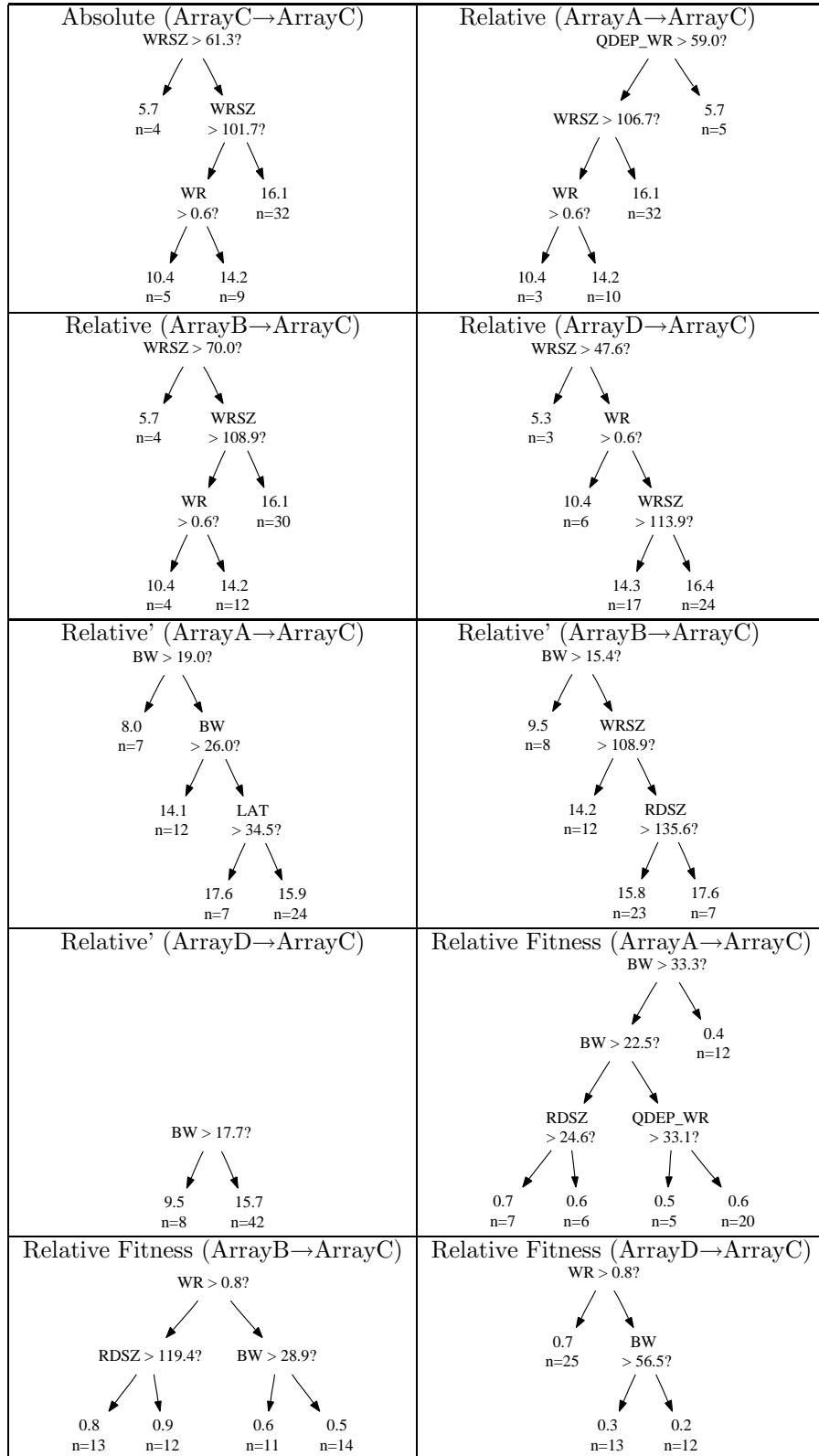


Table F.3: Bandwidth models of ArrayC.

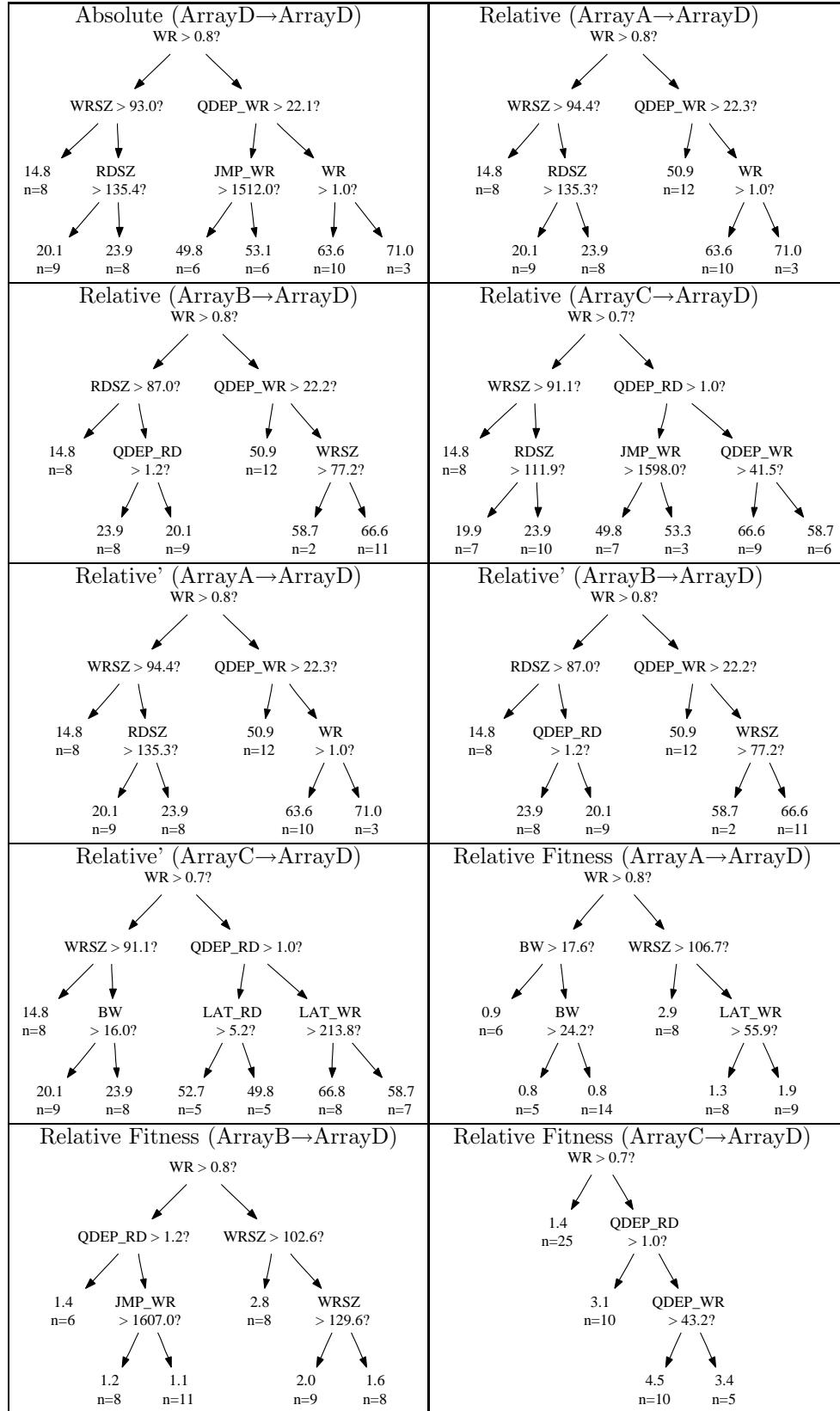


Table F.4: Bandwidth models of ArrayD.

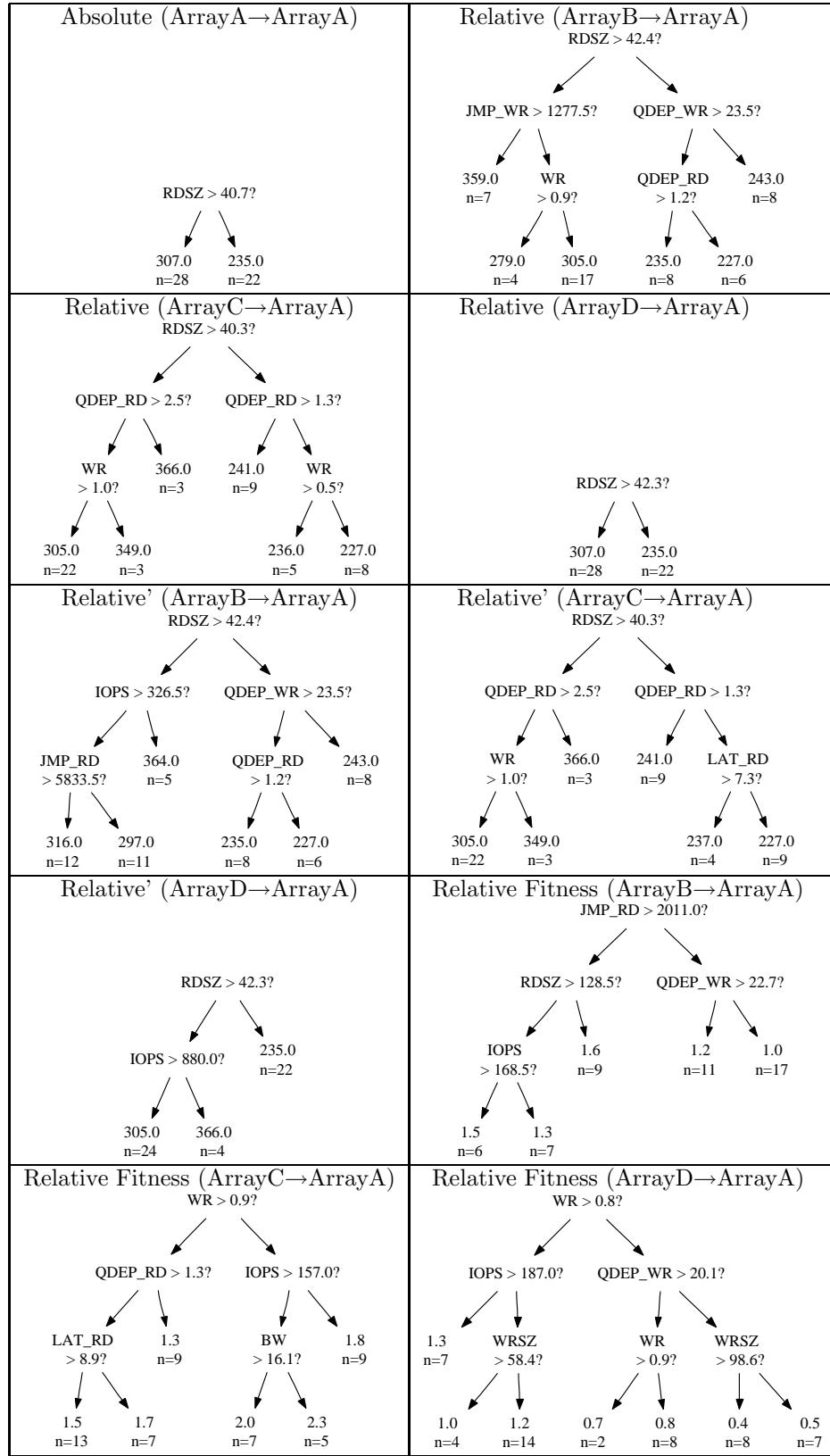


Table F.5: Throughput models of ArrayA.

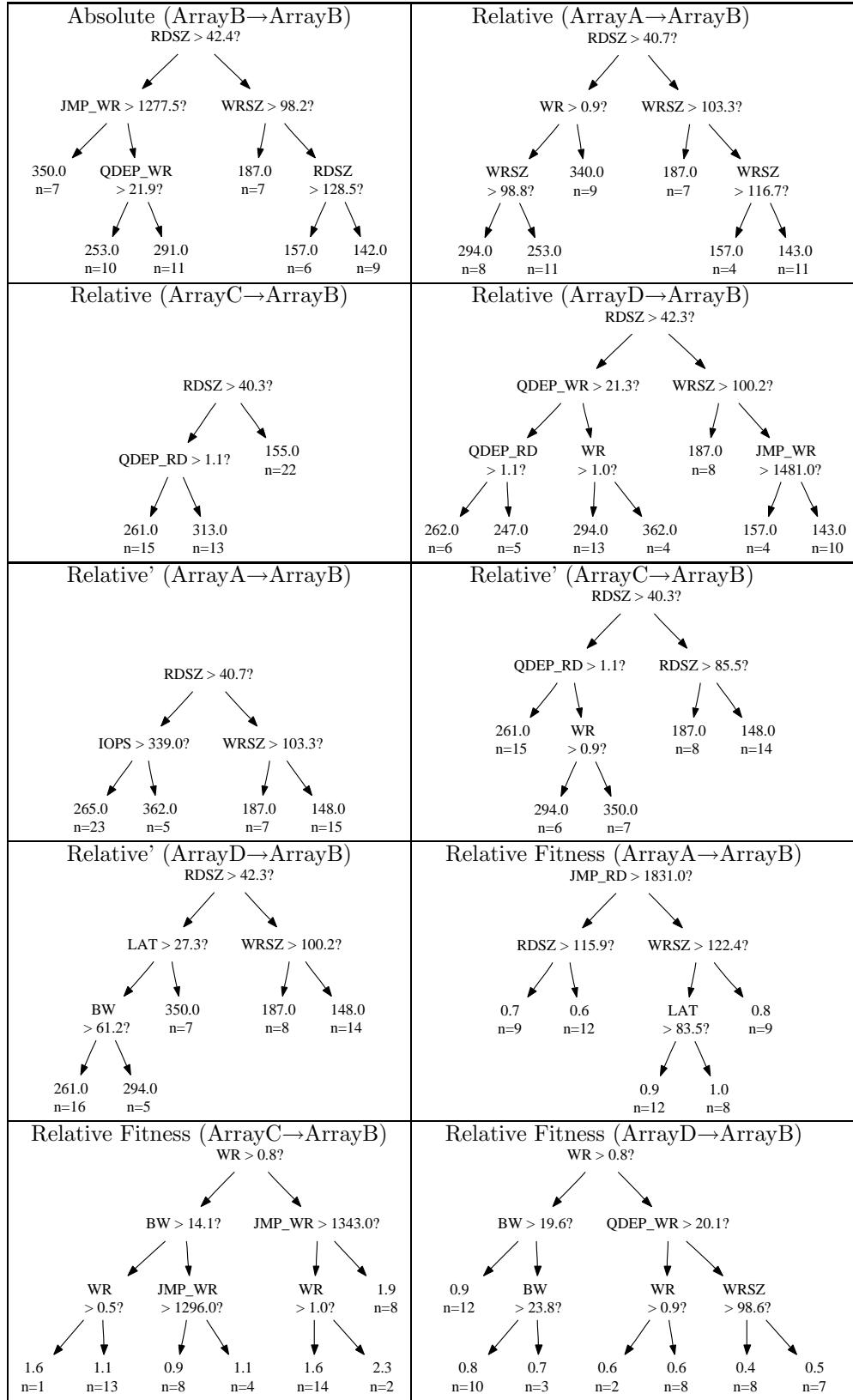


Table F.6: Throughput models of ArrayB.

Absolute (ArrayC→ArrayC) JMP_WR > 630.5?	Relative (ArrayA→ArrayC)
<pre> graph TD     A["JMP_WR &gt; 630.5?"] --&gt; B["219.0 n=6"]     A --&gt; C["WRSZ &gt; 115.4?"]     B --&gt; D["QDEP_RD &gt; 1.4?"]     B --&gt; E["QDEP_WR &gt; 20.9?"]     C --&gt; F["158.0 n=29"]     C --&gt; G["180.0 n=5"]     D --&gt; H["133.0 n=6"]     D --&gt; I["145.0 n=4"]     E --&gt; J["158.0 n=32"]     E --&gt; K["139.0 n=11"]   </pre>	<pre> graph TD     A["JMP_WR &gt; 1199.5?"] --&gt; B["218.0 n=7"]     A --&gt; C["WRSZ &gt; 130.7?"]     B --&gt; D["158.0 n=32"]     B --&gt; E["139.0 n=11"]   </pre>
Relative (ArrayB→ArrayC) QDEP_WR > 38.7?	Relative (ArrayD→ArrayC)
<pre> graph TD     A["QDEP_WR &gt; 38.7?"] --&gt; B["JMP_WR &gt; 1939.5?"]     A --&gt; C["218.0 n=7"]     B --&gt; D["QDEP_RD &gt; 1.1?"]     B --&gt; E["190.0 n=5"]     D --&gt; F["139.0 n=6"]     D --&gt; G["156.0 n=32"]   </pre>	<pre> graph TD     A["QDEP_WR &gt; 44.2?"] --&gt; B["156.0 n=44"]     A --&gt; C["219.0 n=6"]   </pre>
Relative' (ArrayA→ArrayC)	Relative' (ArrayB→ArrayC) QDEP_WR > 38.7?
<pre> graph TD     A["JMP_WR &gt; 1199.5?"] --&gt; B["218.0 n=7"]     A --&gt; C["155.0 n=43"]   </pre>	<pre> graph TD     A["QDEP_WR &gt; 38.7?"] --&gt; B["JMP_WR &gt; 1939.5?"]     A --&gt; C["218.0 n=7"]     B --&gt; D["QDEP_RD &gt; 1.1?"]     B --&gt; E["190.0 n=5"]     D --&gt; F["139.0 n=6"]     D --&gt; G["156.0 n=32"]   </pre>
Relative' (ArrayD→ArrayC) QDEP_WR > 44.2?	Relative Fitness (ArrayA→ArrayC)
<pre> graph TD     A["QDEP_WR &gt; 44.2?"] --&gt; B["IOPS &gt; 712.5?"]     A --&gt; C["219.0 n=6"]     B --&gt; D["WRSZ &gt; 135.8?"]     B --&gt; E["192.0 n=5"]     D --&gt; F["156.0 n=33"]     D --&gt; G["139.0 n=6"]   </pre>	<pre> graph TD     A["BW &gt; 33.3?"] --&gt; B["0.6 n=38"]     A --&gt; C["0.5 n=12"]   </pre>
Relative Fitness (ArrayB→ArrayC) JMP_RD > 2043.0?	Relative Fitness (ArrayD→ArrayC) WR > 0.8?
<pre> graph TD     A["JMP_RD &gt; 2043.0?"] --&gt; B["QDEP_RD &gt; 1.2?"]     A --&gt; C["BW &gt; 27.7?"]     B --&gt; D["1.1 n=13"]     B --&gt; E["0.9 n=10"]     C --&gt; F["0.6 n=13"]     C --&gt; G["0.5 n=14"]   </pre>	<pre> graph TD     A["WR &gt; 0.8?"] --&gt; B["0.8 n=25"]     A --&gt; C["QDEP_WR &gt; 22.1?"]     B --&gt; D["0.3 n=12"]     B --&gt; E["0.2 n=13"]     C --&gt; F["0.3 n=12"]     C --&gt; G["0.2 n=13"]   </pre>

Table F.7: Throughput models of ArrayC.

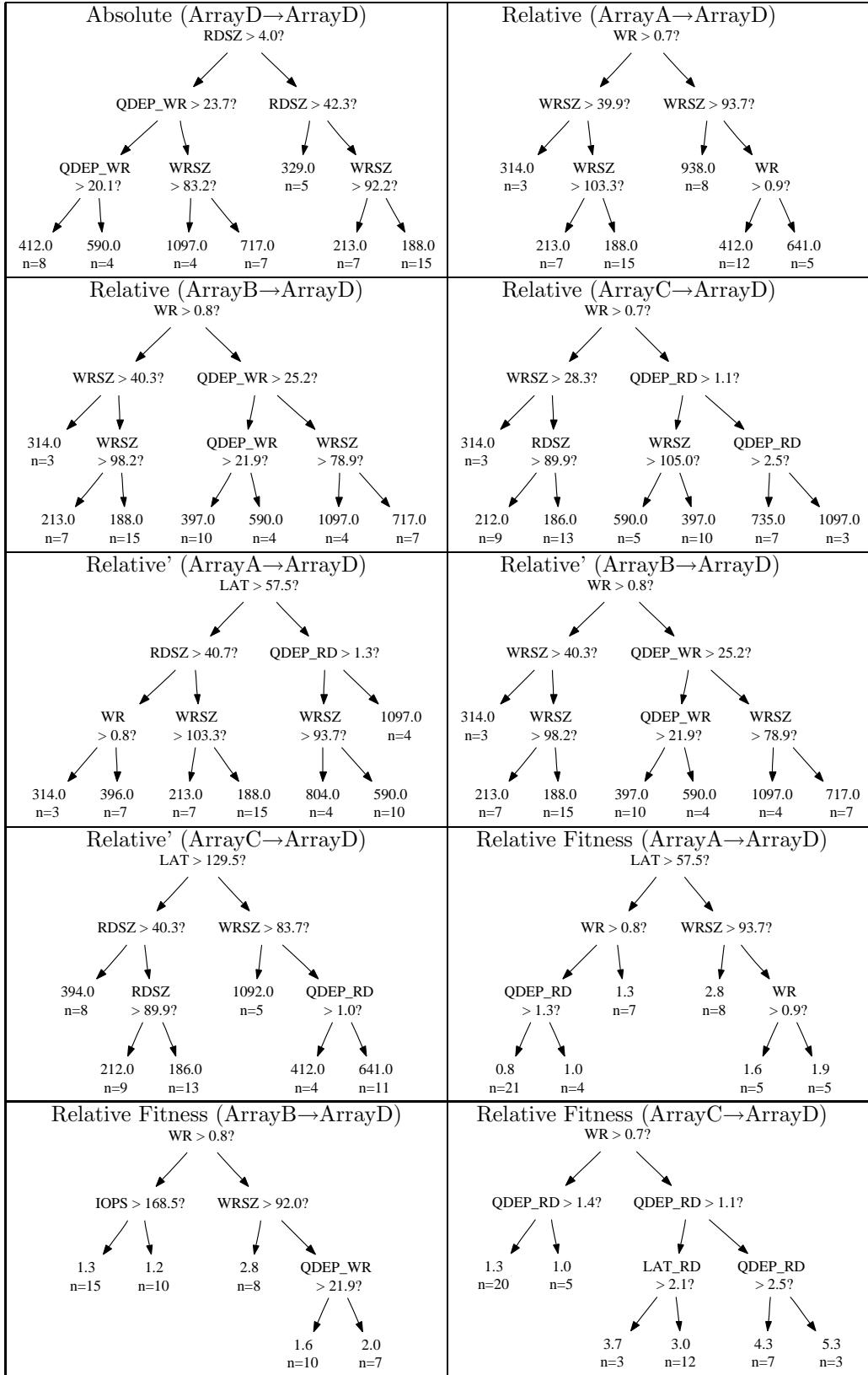


Table F.8: Throughput models of ArrayD.

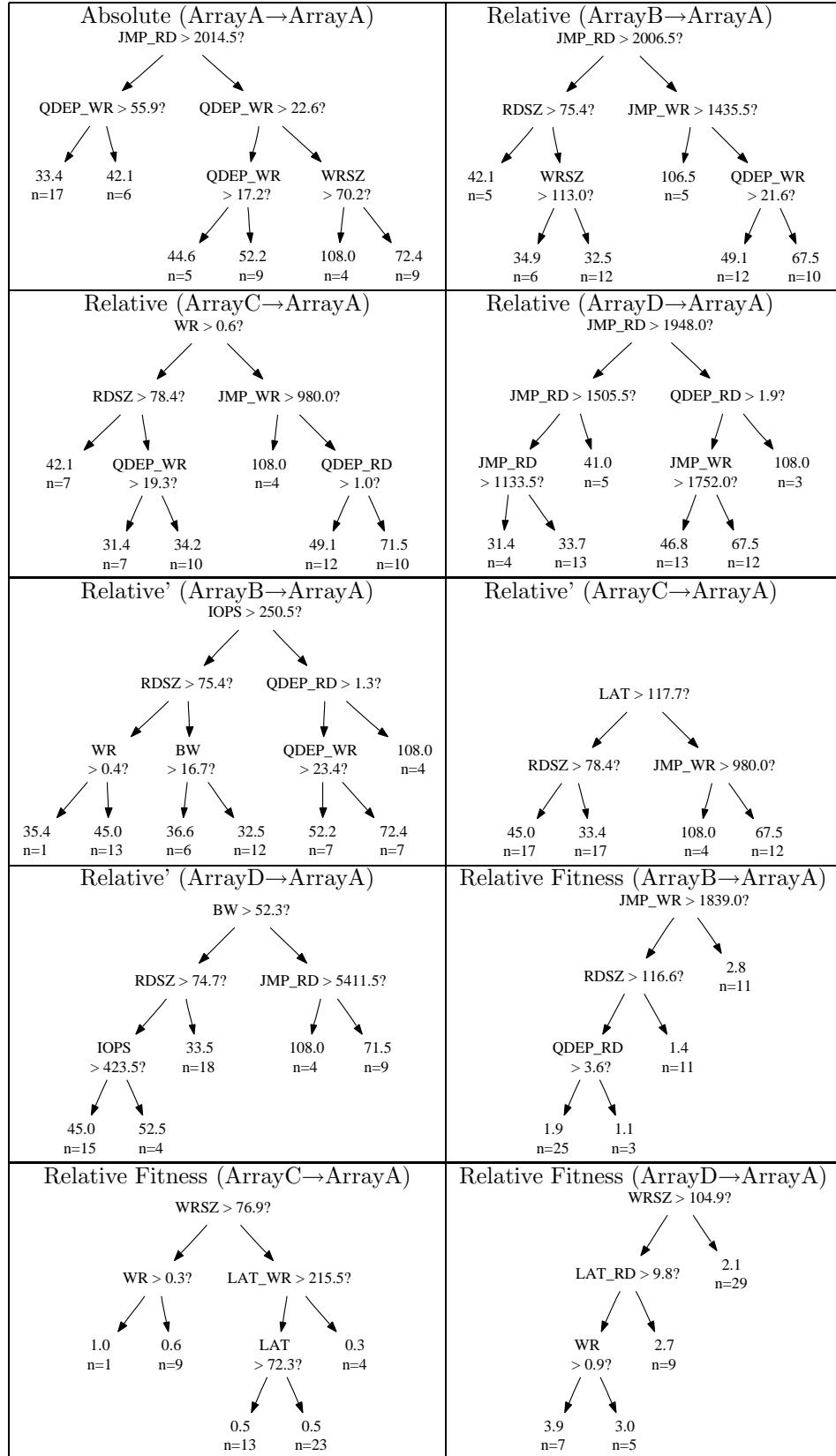


Table F.9: Latency models of ArrayA.

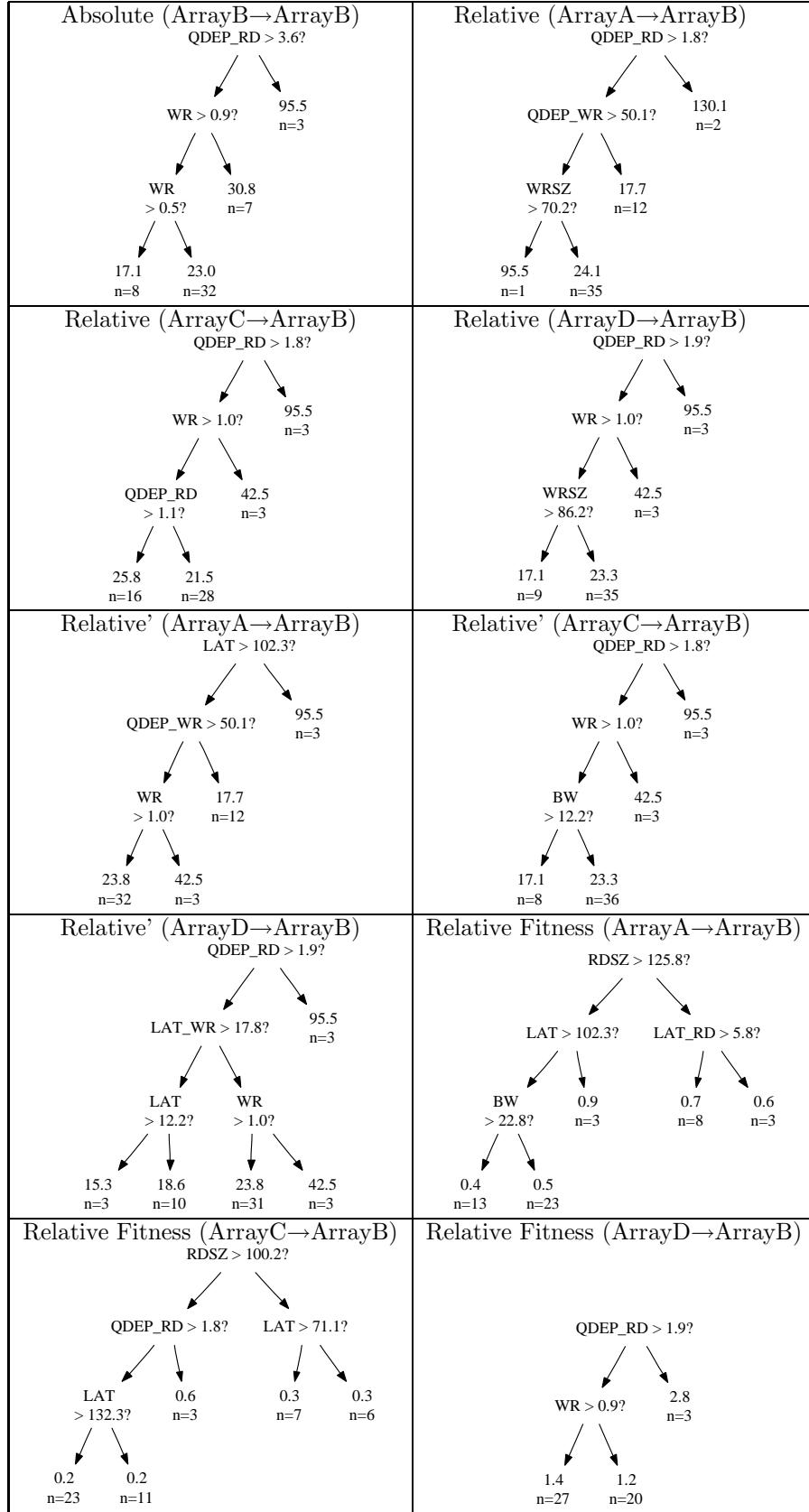


Table F.10: Latency models of ArrayB.

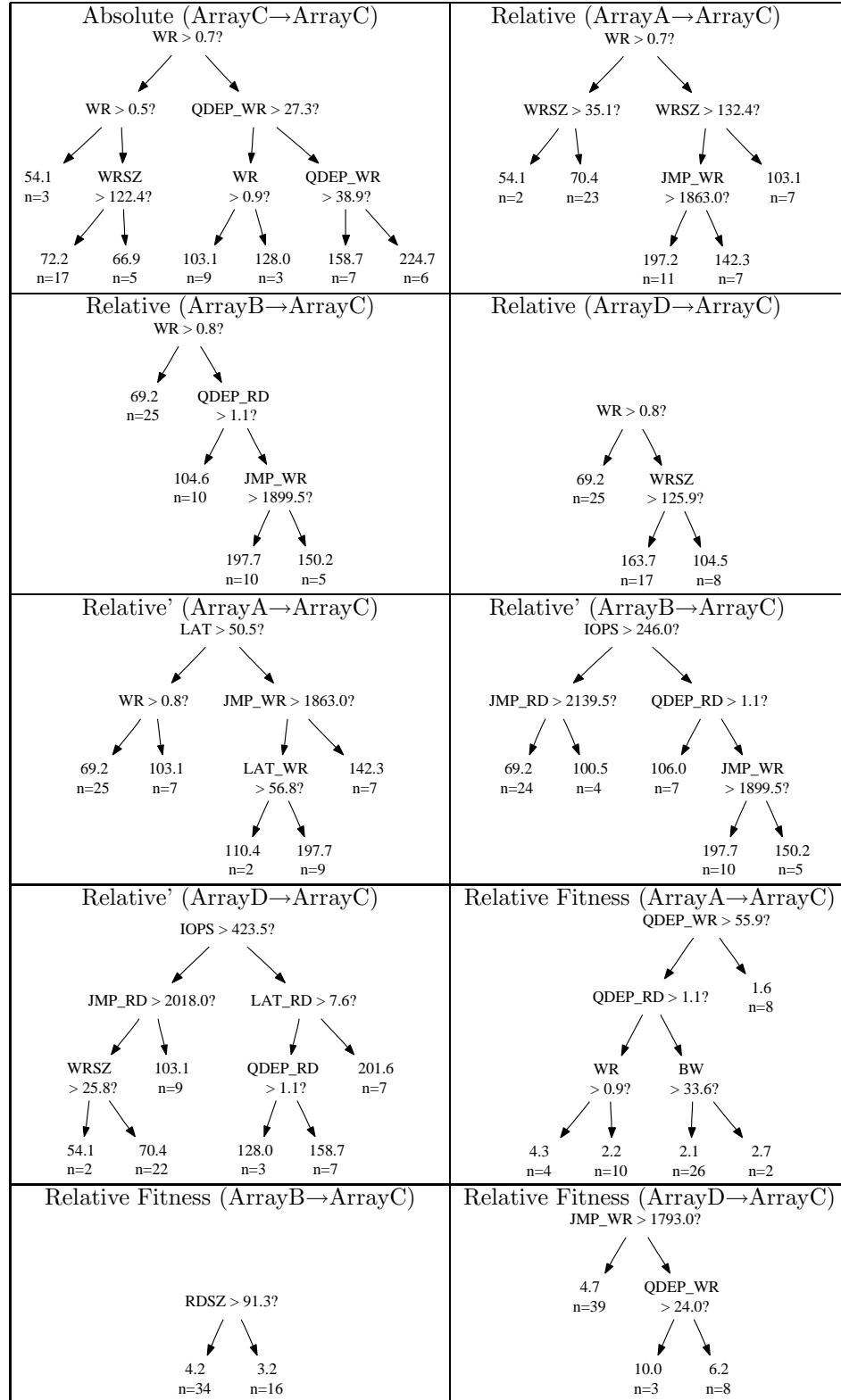


Table F.11: Latency models of ArrayC.

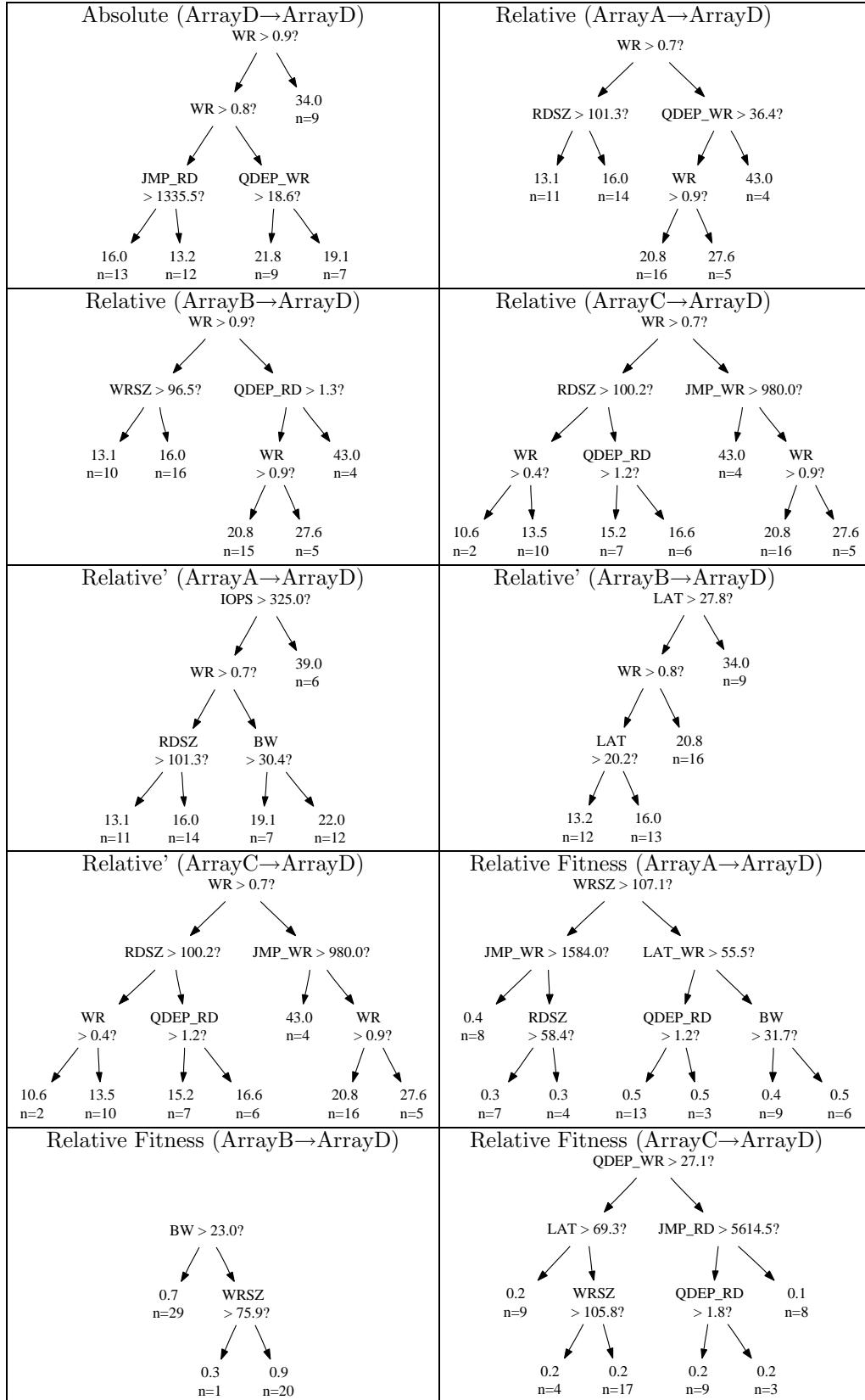


Table F.12: Latency models of ArrayD.



## **Appendix G**

### **TPC-C models**

Absolute (ArrayA→ArrayA) JMP_RD > 232.0?	Relative (ArrayB→ArrayA) JMP_RD > 227.0?
<pre> graph TD     A["JMP_RD &gt; 232.0?"] --&gt; B["2.2 n=7"]     A --&gt; C["JMP_RD &gt; 300.0?"]     B --&gt; D["1.6 n=8"]     C --&gt; E["RDSZ &gt; 8.0?"]     D --&gt; F["1.4 n=3"]     E --&gt; G["1.5 n=7"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 227.0?"] --&gt; B["2.2 n=7"]     A --&gt; C["JMP_RD &gt; 275.0?"]     B --&gt; D["1.6 n=5"]     C --&gt; E["QDEP_WR &gt; 24.0?"]     D --&gt; F["1.4 n=4"]     E --&gt; G["1.5 n=9"]   </pre>
Relative (ArrayC→ArrayA) JMP_RD > 245.0?	Relative (ArrayD→ArrayA) JMP_RD > 272.0?
<pre> graph TD     A["JMP_RD &gt; 245.0?"] --&gt; B["2.2 n=7"]     A --&gt; C["1.5 n=18"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 272.0?"] --&gt; B["2.2 n=6"]     A --&gt; C["JMP_RD &gt; 305.5?"]     B --&gt; D["1.8 n=4"]     C --&gt; E["1.5 n=15"]   </pre>
Relative' (ArrayB→ArrayA) LAT_RD > 6.5? JMP_RD > 272.0?	Relative' (ArrayC→ArrayA) JMP_RD > 245.0?
<pre> graph TD     A["LAT_RD &gt; 6.5? JMP_RD &gt; 272.0?"] --&gt; B["2.2 n=6"]     A --&gt; C["BW &gt; 1.1?"]     B --&gt; D["QDEP_WR &gt; 24.0?"]     C --&gt; E["1.6 n=7"]     D --&gt; F["1.4 n=4"]     E --&gt; G["1.5 n=8"]   </pre>	<pre> graph TD     A["JMP_RD &gt; 245.0?"] --&gt; B["2.2 n=7"]     A --&gt; C["1.5 n=18"]   </pre>
Relative' (ArrayD→ArrayA) JMP_RD > 272.0?	Relative Fitness (ArrayB→ArrayA) LAT_RD > 6.5?
<pre> graph TD     A["JMP_RD &gt; 272.0?"] --&gt; B["2.2 n=6"]     A --&gt; C["JMP_RD &gt; 305.5?"]     B --&gt; D["1.8 n=4"]     C --&gt; E["1.5 n=15"]   </pre>	<pre> graph TD     A["LAT_RD &gt; 6.5?"] --&gt; B["1.7 n=6"]     A --&gt; C["1.5 n=19"]   </pre>
Relative Fitness (ArrayC→ArrayA) LAT_WR > 20.5?	Relative Fitness (ArrayD→ArrayA) WRSZ > 7.9?
<pre> graph TD     A["LAT_WR &gt; 20.5?"] --&gt; B["0.7 n=11"]     A --&gt; C["0.9 n=14"]   </pre>	<pre> graph TD     A["WRSZ &gt; 7.9?"] --&gt; B["2.5 n=1"]     A --&gt; C["LAT &gt; 1.9?"]     B --&gt; D["0.6 n=14"]     C --&gt; E["QDEP_WR &gt; 40.3?"]     D --&gt; F["0.7 n=9"]     E --&gt; G["1.2 n=1"]   </pre>

Table G.1: Bandwidth models of ArrayA.

Absolute (ArrayB→ArrayB)	Relative (ArrayA→ArrayB) JMP_RD > 261.0?
JMP_RD > 256.5? 1.3 n=10    1.0 n=15	1.3 n=9    JMP_RD > 312.0? 1.1 n=9    0.9 n=7
Relative (ArrayC→ArrayB) JMP_RD > 263.0? 1.3 n=9    RDSZ > 8.1? 0.9 n=9    1.1 n=7	Relative (ArrayD→ArrayB) JMP_RD > 305.5? QDEP_WR > 5.6? 1.1 n=1    1.3 n=9    RDSZ > 8.1? 0.9 n=9    1.1 n=6
Relative' (ArrayA→ArrayB) BW > 1.6? JMP_RD > 313.5? 1.0 n=6    0.9 n=6    JMP_RD > 264.5? 1.3 n=9    1.2 n=4	Relative' (ArrayC→ArrayB) JMP_RD > 263.0? 1.3 n=9    RDSZ > 8.1? 0.9 n=9    1.1 n=7
Relative' (ArrayD→ArrayB) JMP_RD > 305.5? QDEP_WR > 5.6? 1.1 n=1    1.3 n=9    RDSZ > 8.1? 0.9 n=9    1.1 n=6	Relative Fitness (ArrayA→ArrayB) JMP_RD > 214.0? 0.6 n=6    0.7 n=19
Relative Fitness (ArrayC→ArrayB) BW > 1.9? WR > 0.1? 0.1 n=1    0.7 n=9    RDSZ > 8.1? 0.5 n=7    0.6 n=8	Relative Fitness (ArrayD→ArrayB) WRSZ > 7.9? 1.6 n=1    BW > 2.5? 0.5 n=10    WRSZ > 8.8? 0.5 n=5    0.4 n=9

Table G.2: Bandwidth models of ArrayB.

Absolute (ArrayC→ArrayC)	Relative (ArrayA→ArrayC) WRSZ > 8.1?
JMP_RD > 301.0? 2.1 n=16    1.8 n=9	1.5 n=2    JMP_RD > 261.0? 2.2 n=8    WRSZ > 8.5? 1.8 n=6    2.0 n=9
Relative (ArrayB→ArrayC) RDSZ > 8.0? 1.5 n=2    RDSZ > 8.1? QDEP_WR > 27.3?    1.8 n=8 2.0 n=5    2.2 n=10	Relative (ArrayD→ArrayC) QDEP_WR > 8.3? 2.1 n=12    RDSZ > 8.2? RDSZ > 8.1?    2.4 n=3 1.5 n=5    1.9 n=5
Relative' (ArrayA→ArrayC) WRSZ > 8.1? 1.5 n=2    JMP_RD > 261.0? 2.2 n=8    WRSZ > 8.5? 1.8 n=6    2.0 n=9	Relative' (ArrayB→ArrayC) LAT_WR > 92.4? WRSZ > 8.3?    2.2 n=8 1.6 n=6    RDSZ > 8.0? 2.1 n=6    1.9 n=5
Relative' (ArrayD→ArrayC) BW > 2.0? 1.5 n=4    BW > 2.8? LAT_RD > 1.9?    2.4 n=3 2.1 n=8    1.9 n=10	Relative Fitness (ArrayA→ArrayC) LAT_RD > 4.6? WR > 0.1?    1.5 n=7 0.8 n=2    WRSZ > 8.5? 1.1 n=10    1.3 n=6
Relative Fitness (ArrayB→ArrayC) LAT_RD > 7.8? 1.7 n=17    2.1 n=8	Relative Fitness (ArrayD→ArrayC) WRSZ > 7.9? 1.5 n=1    JMP_WR > 172.5? RDSZ > 8.2?    0.9 n=3 0.8 n=17    0.7 n=4

Table G.3: Bandwidth models of ArrayC.

Absolute (ArrayD→ArrayD) WRSZ > 7.9?	Relative (ArrayA→ArrayD) WR > 0.0?
<p>0.9 n=1      QDEP_WR           &gt; 12.2?  RDSZ &gt; 8.0? 1.8 n=1      2.6 n=20</p>	<p>0.9 n=1      WRSZ           &gt; 8.3?  2.2 n=6      WR           &gt; 0.1? 2.0 n=1      2.6 n=17</p>
Relative (ArrayB→ArrayD) WRSZ > 8.2?	Relative (ArrayC→ArrayD) WRSZ > 8.3?
<p>WRSZ &gt; 8.2? 1.9 n=5      2.6 n=20</p>	<p>1.9 n=6      QDEP_WR           &gt; 25.5?  JMP_WR &gt; 120.5? 2.5 n=16      2.8 n=2</p>
Relative' (ArrayA→ArrayD) WR > 0.0?	Relative' (ArrayB→ArrayD) WRSZ > 8.2?
<p>0.9 n=1      WRSZ           &gt; 8.3?  2.2 n=6      WR           &gt; 0.1? 2.0 n=1      2.6 n=17</p>	<p>WRSZ &gt; 8.2? 1.9 n=5      2.6 n=20</p>
Relative' (ArrayC→ArrayD) BW > 1.6?	Relative Fitness (ArrayA→ArrayD) WR > 0.1?
<p>1.9 n=4      LAT           &gt; 7.0?  JMP_WR &gt; 119.5? 2.5 n=15      2.8 n=3</p>	<p>WR &gt; 0.1? LAT_RD &gt; 3.1? 0.9 n=3      1.3 n=9</p> <p>LAT &gt; 6.7? 1.7 n=9      1.9 n=4</p>
Relative Fitness (ArrayB→ArrayD) LAT_RD > 7.8?	Relative Fitness (ArrayC→ArrayD) JMP_RD > 304.0?
<p>LAT_RD &gt; 7.8? WR &gt; 0.0? 0.6 n=1      WR           &gt; 0.0? 1.4 n=1      2.1 n=15</p>	<p>JMP_RD &gt; 304.0? WR &gt; 0.1? 0.7 n=1      QDEP_WR           &gt; 15.6? 1.2 n=13      1.1 n=3</p>

Table G.4: Bandwidth models of ArrayD.

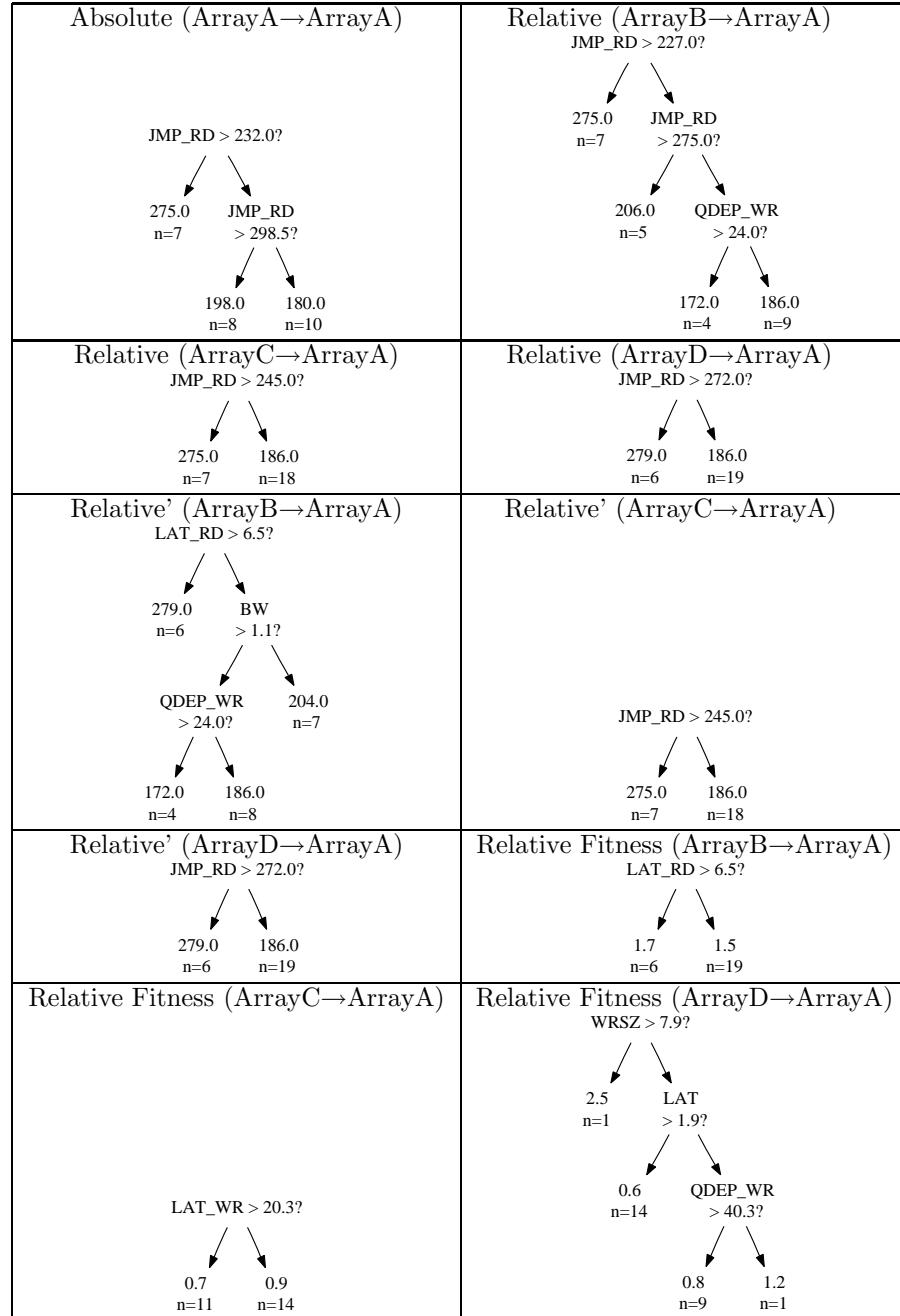


Table G.5: Throughput models of ArrayA.

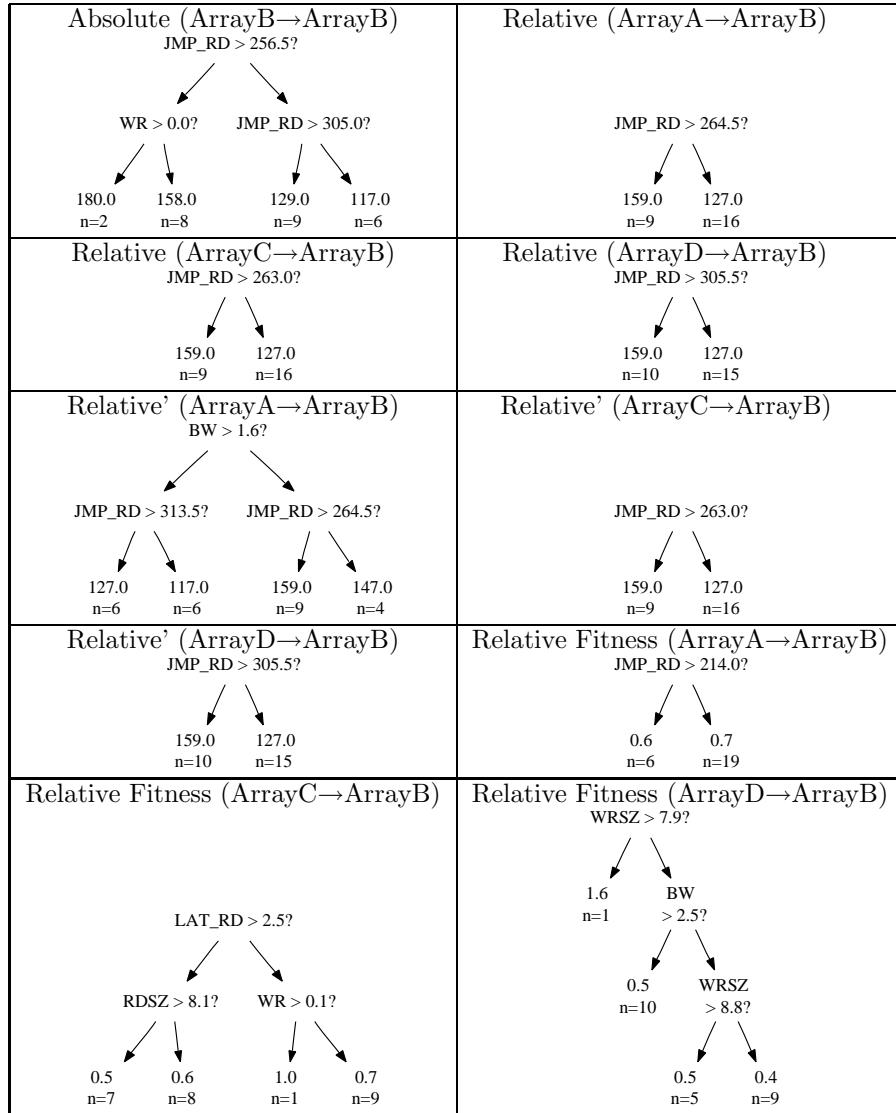


Table G.6: Throughput models of ArrayB.

Absolute (ArrayC→ArrayC)	Relative (ArrayA→ArrayC) WRSZ > 8.1?  <pre> graph TD     Root1[WRSZ &gt; 8.1?] --&gt; Node1_1[192.0 n=2]     Root1 --&gt; Node1_2[JMP_RD &gt; 264.5?]     Node1_1 --&gt; Node2_1[273.0 n=8]     Node1_2 --&gt; Node2_2[WRSZ &gt; 8.5?]     Node2_1 --&gt; Node3_1[211.0 n=6]     Node2_2 --&gt; Node3_2[257.0 n=9]   </pre>
Relative (ArrayB→ArrayC) RDSZ > 8.1?	Relative (ArrayD→ArrayC) WR > 0.1?  <pre> graph TD     Root2[RDSZ &gt; 8.1?] --&gt; Node4_1[192.0 n=2]     Root2 --&gt; Node4_2[QDEP_WR &gt; 27.3?]     Node4_1 --&gt; Node5_1[248.0 n=5]     Node4_2 --&gt; Node5_2[273.0 n=10]     Node5_1 --&gt; Node6_1[225.0 n=8]   </pre>
Relative' (ArrayA→ArrayC) WRSZ > 8.1?	Relative' (ArrayB→ArrayC) RDSZ > 8.1?  <pre> graph TD     Root3[WRSZ &gt; 8.1?] --&gt; Node7_1[192.0 n=2]     Root3 --&gt; Node7_2[JMP_RD &gt; 264.5?]     Node7_1 --&gt; Node8_1[273.0 n=8]     Node7_2 --&gt; Node8_2[WRSZ &gt; 8.5?]     Node8_1 --&gt; Node9_1[211.0 n=6]     Node8_2 --&gt; Node9_2[257.0 n=9]   </pre>
Relative' (ArrayD→ArrayC)	Relative Fitness (ArrayA→ArrayC) WRSZ > 8.5?  <pre> graph TD     Root4[BW &gt; 2.0?] --&gt; Node10_1[192.0 n=4]     Root4 --&gt; Node10_2[261.0 n=21]   </pre>
Relative Fitness (ArrayB→ArrayC)	Relative Fitness (ArrayD→ArrayC) WRSZ > 7.9?  <pre> graph TD     Root5[LAT_RD &gt; 7.8?] --&gt; Node11_1[1.7 n=17]     Root5 --&gt; Node11_2[2.1 n=8]   </pre>

Table G.7: Throughput models of ArrayC.

<p><b>Absolute (ArrayD→ArrayD)</b></p> <p>WRSZ &gt; 7.9?</p>	<p><b>Relative (ArrayA→ArrayD)</b></p> <p>WR &gt; 0.0?</p>
<p><b>Relative (ArrayB→ArrayD)</b></p> <p>WRSZ &gt; 8.2?</p>	<p><b>Relative (ArrayC→ArrayD)</b></p> <p>WRSZ &gt; 8.3?</p>
<p><b>Relative' (ArrayA→ArrayD)</b></p> <p>WR &gt; 0.0?</p>	<p><b>Relative' (ArrayB→ArrayD)</b></p> <p>WRSZ &gt; 8.2?</p>
<p><b>Relative' (ArrayC→ArrayD)</b></p> <p>BW &gt; 1.6?</p>	<p><b>Relative Fitness (ArrayA→ArrayD)</b></p> <p>WR &gt; 0.1?</p>
<p><b>Relative Fitness (ArrayB→ArrayD)</b></p> <p>LAT_RD &gt; 7.8?</p>	<p><b>Relative Fitness (ArrayC→ArrayD)</b></p> <p>JMP_RD &gt; 288.5?</p>

Table G.8: Throughput models of ArrayD.

Absolute (ArrayA→ArrayA)	Relative (ArrayB→ArrayA) WRSZ > 8.1?
WR > 0.1? 3.9 n=5      6.3 n=20	3.7 n=3 QDEP_WR > 26.3? 6.4 n=13      5.6 n=9
Relative (ArrayC→ArrayA) JMP_WR > 96.0? RDSZ > 8.0? 3.9 n=4 6.8 n=6 RDSZ > 8.2? 5.7 n=9      6.5 n=6	Relative (ArrayD→ArrayA) QDEP_WR > 7.9? WR > 0.1? 3.9 n=1 JMP_WR > 25.5? 5.5 n=1      6.5 n=14
Relative' (ArrayB→ArrayA) WRSZ > 8.1? 3.7 n=3 QDEP_WR > 26.3? 5.6 n=9 BW > 0.9? 7.0 n=3      6.4 n=10	Relative' (ArrayC→ArrayA) JMP_WR > 96.0? RDSZ > 8.0? 3.9 n=4 6.8 n=6 RDSZ > 8.2? 5.7 n=9      6.5 n=6
Relative' (ArrayD→ArrayA) BW > 1.8? 3.7 n=3      6.2 n=22	Relative Fitness (ArrayB→ArrayA) LAT > 12.3? 0.6 n=4 LAT > 18.2? 0.4 n=9      0.3 n=12
Relative Fitness (ArrayC→ArrayA) WRSZ > 8.8? QDEP_WR > 17.4? WR > 0.2? 1.1 n=13      0.6 n=2 1.6 n=5      1.3 n=5	Relative Fitness (ArrayD→ArrayA) LAT_RD > 2.1? BW > 2.8? 2.3 n=9 QDEP_WR > 3.9? 4.2 n=6      3.8 n=9 2.3 n=1

Table G.9: Latency models of ArrayA.

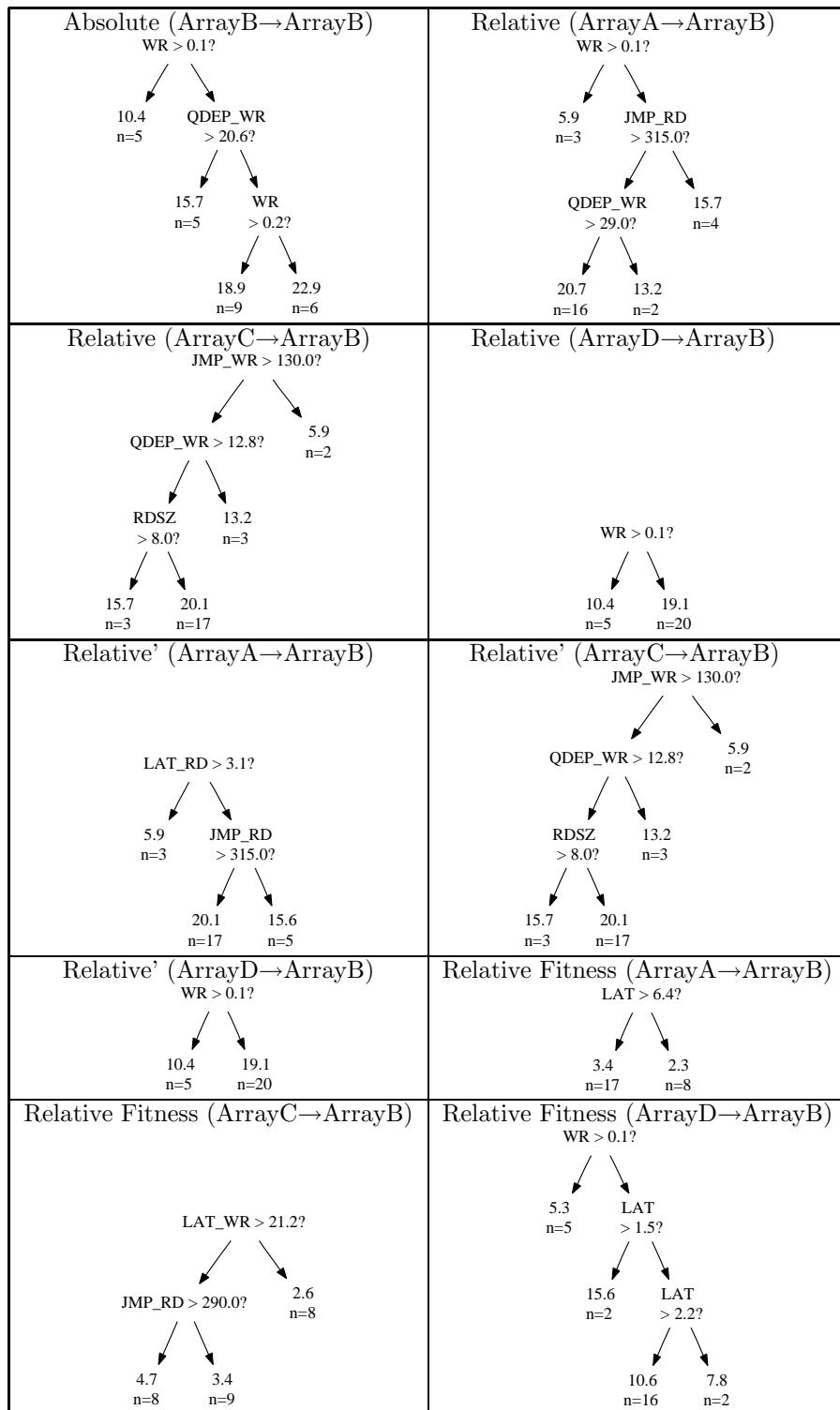


Table G.10: Latency models of ArrayB.

Absolute (ArrayC→ArrayC) QDEP_WR > 6.8?	Relative (ArrayA→ArrayC) JMP_WR > 25.0?
<pre>     4.2   JMP_RD &gt; 301.5?     n=8                  -----+     QDEP_WR &gt; 19.4?  5.9     n=7                  -----+     5.1   8.1     n=9   n=1   </pre>	<pre>     8.1   WR &gt; 0.1?     n=2                  -----+     4.3   WRSZ &gt; 8.5?     n=4                  -----+     5.8   4.9     n=5   n=14   </pre>
Relative (ArrayB→ArrayC) QDEP_WR > 30.4?	Relative (ArrayD→ArrayC) JMP_WR > 49.0?
<pre>     QDEP_WR &gt; 22.4?  4.3     n=5                  -----+     4.7   WRSZ &gt; 8.4?     n=9                  -----+     6.7   5.5     n=4   n=7   </pre>	<pre>     3.6   WRSZ &gt; 8.7?     n=3                  -----+     5.8   JMP_WR &gt; 133.5?     n=9                  -----+     5.1   4.3     n=8   n=5   </pre>
Relative' (ArrayA→ArrayC) JMP_WR > 25.0?	Relative' (ArrayB→ArrayC) QDEP_WR > 30.4?
<pre>     8.1   LAT &gt; 5.5?     n=2                  -----+     4.0   WRSZ &gt; 8.5?     n=5                  -----+     5.8   4.9     n=5   n=13   </pre>	<pre>     QDEP_WR &gt; 22.4?  4.3     n=5                  -----+     4.7   WRSZ &gt; 8.4?     n=9                  -----+     6.7   5.5     n=4   n=7   </pre>
Relative' (ArrayD→ArrayC) IOPS > 293.5?	Relative Fitness (ArrayA→ArrayC) JMP_WR > 25.0?
<pre>     5.9   JMP_RD &gt; 301.5?     n=8                  -----+     4.3   RDSZ &gt; 8.1?     n=6                  -----+     4.7   6.1     n=7   n=4   </pre>	<pre>     2.2   LAT &gt; 6.3?     n=2                  -----+     WRSZ &gt; 8.6?  0.7     n=9                  -----+     1.0   0.7     n=9   n=5   </pre>
Relative Fitness (ArrayB→ArrayC) QDEP_WR > 4.1?	Relative Fitness (ArrayD→ArrayC) LAT_RD > 2.5?
<pre>     1.4   LAT &gt; 13.2?     n=1                  -----+     0.5   LAT &gt; 20.4?     n=4                  -----+     0.3   0.2     n=12  n=8   </pre>	<pre>     BW &gt; 2.6?  2.1     n=4                  -----+     BW &gt; 2.6?  2.3     n=15  n=4      -----+     3.9     n=2   </pre>

Table G.11: Latency models of ArrayC.

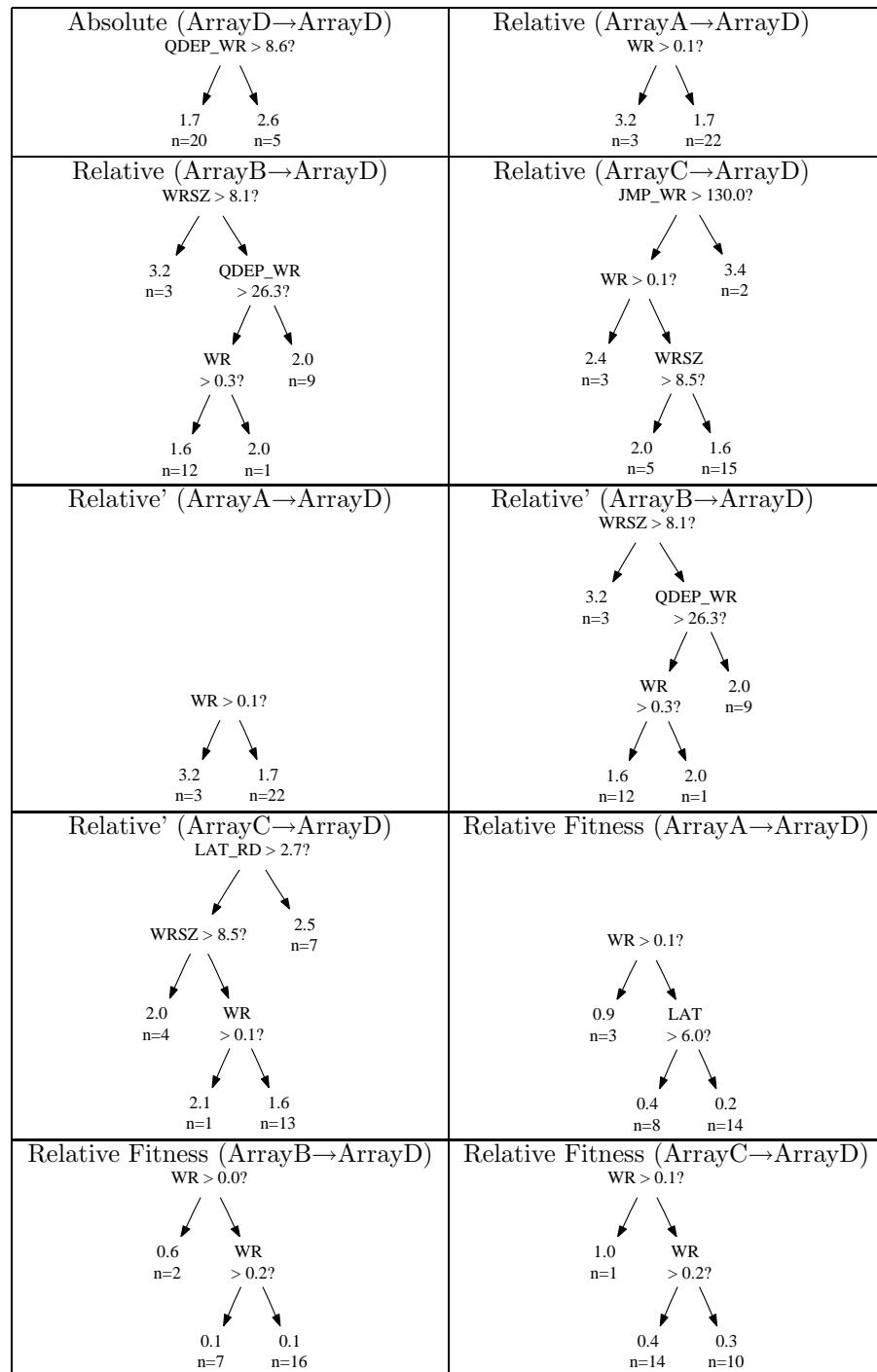


Table G.12: Latency models of ArrayD.



## Appendix H

### WorkloadMix models

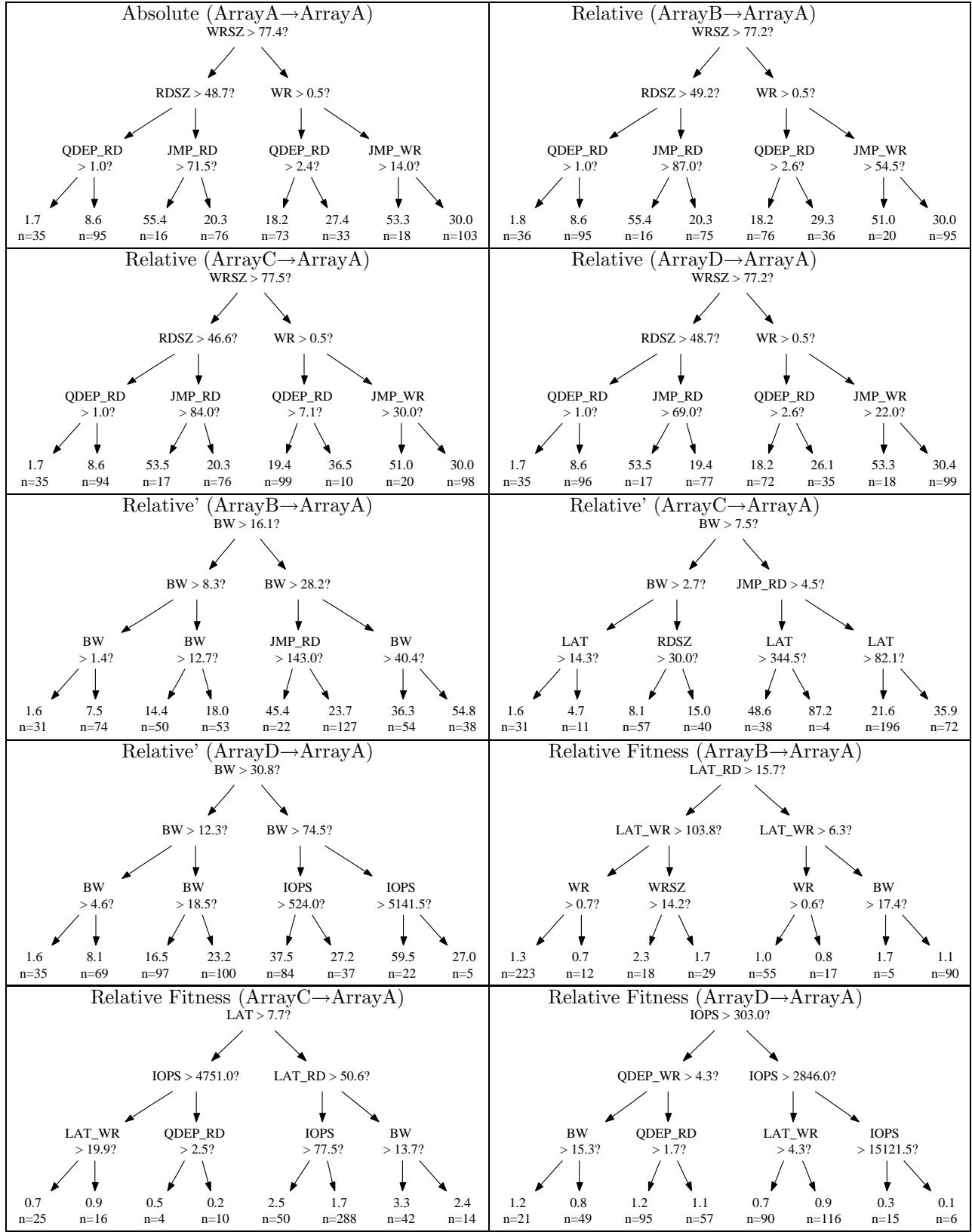


Table H.1: Bandwidth models of ArrayA.

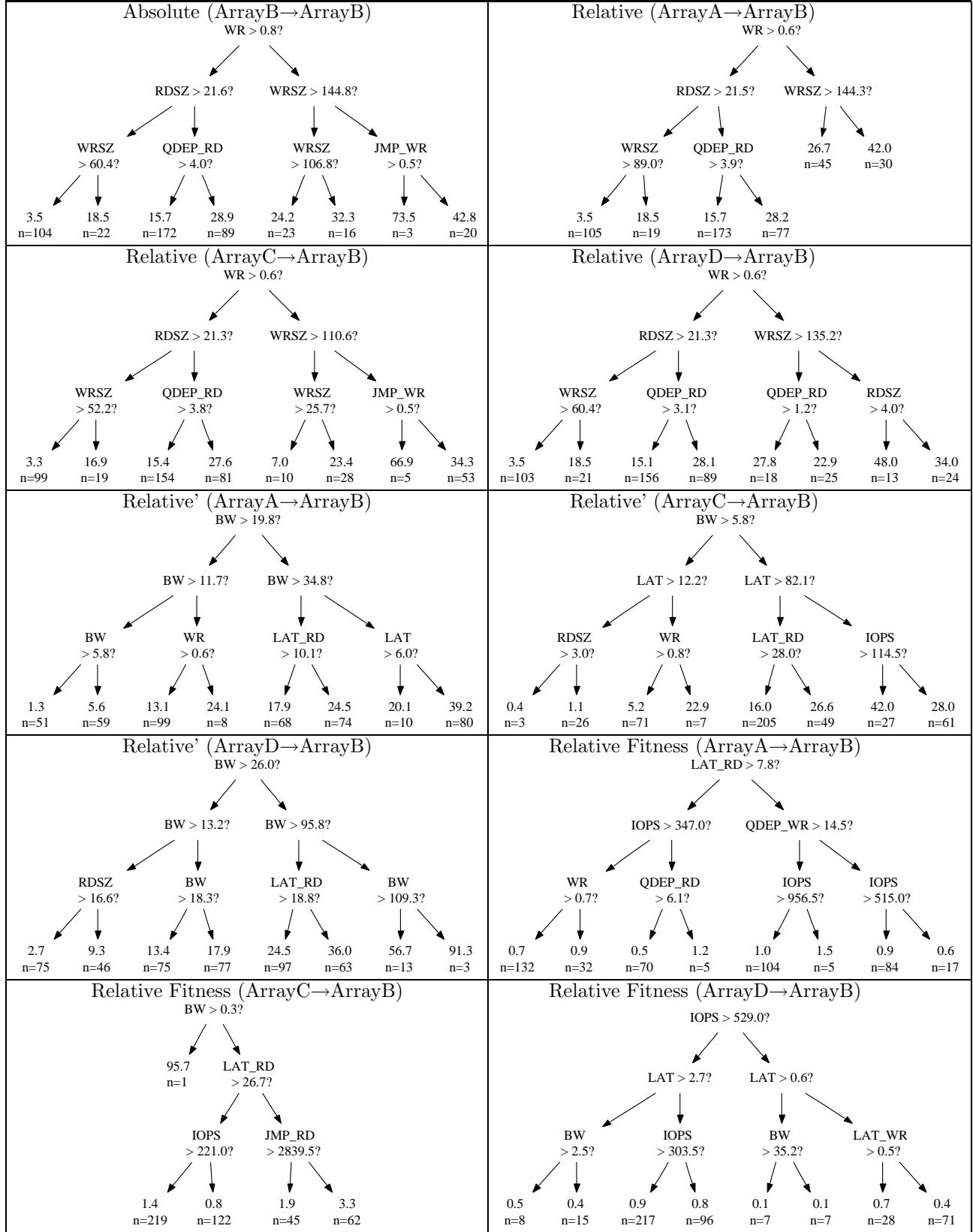


Table H.2: Bandwidth models of ArrayB.

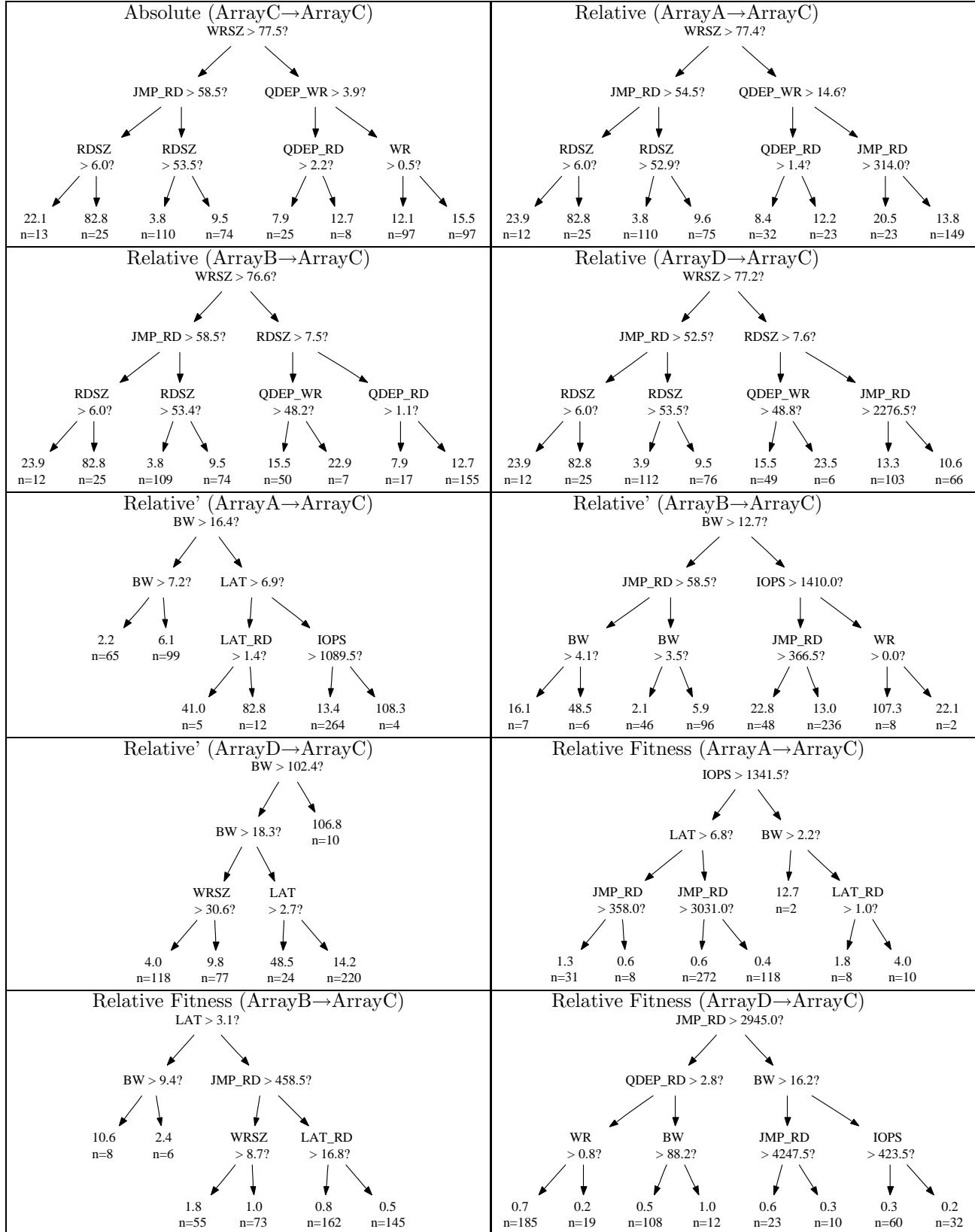


Table H.3: Bandwidth models of ArrayC.

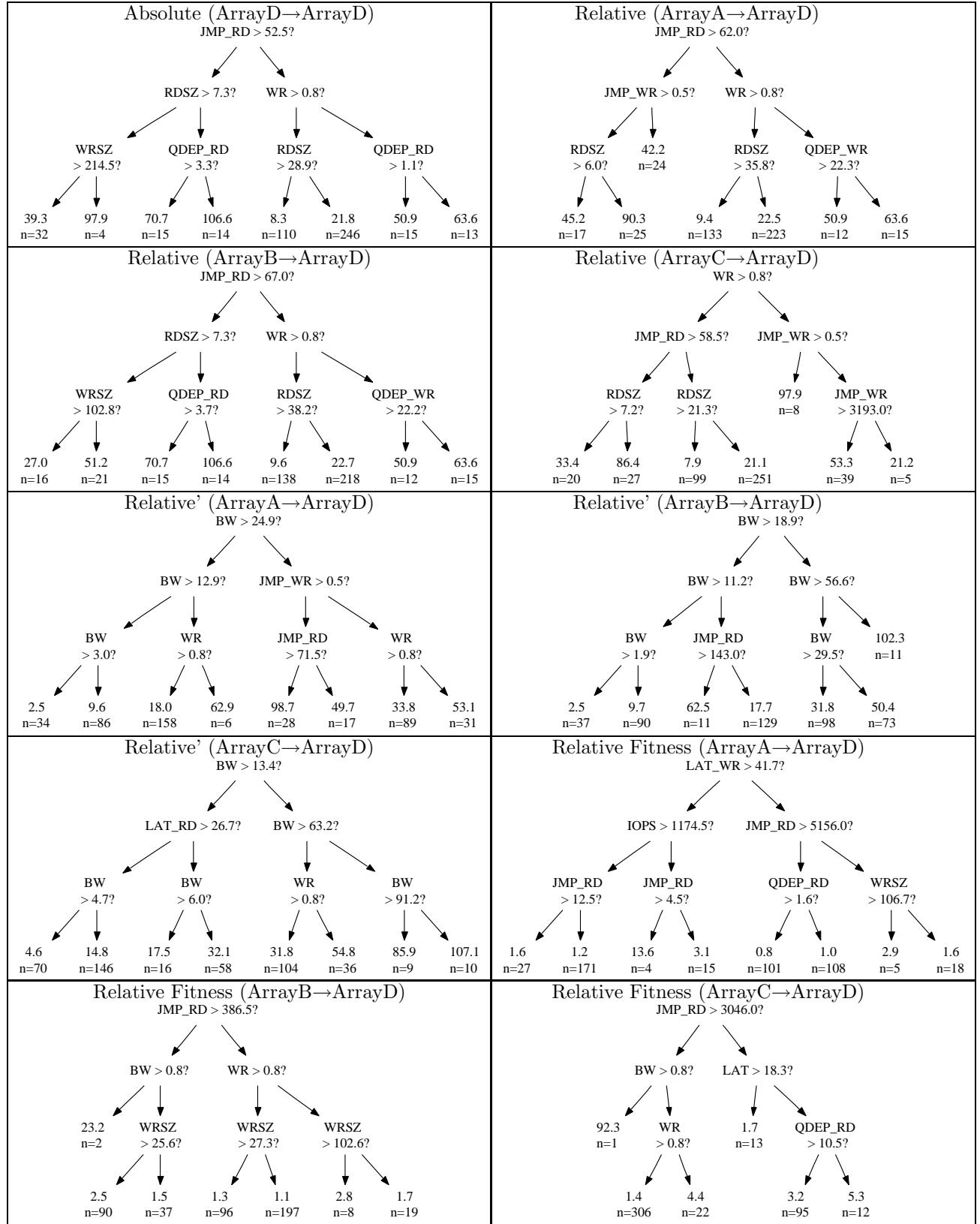


Table H.4: Bandwidth models of ArrayD.

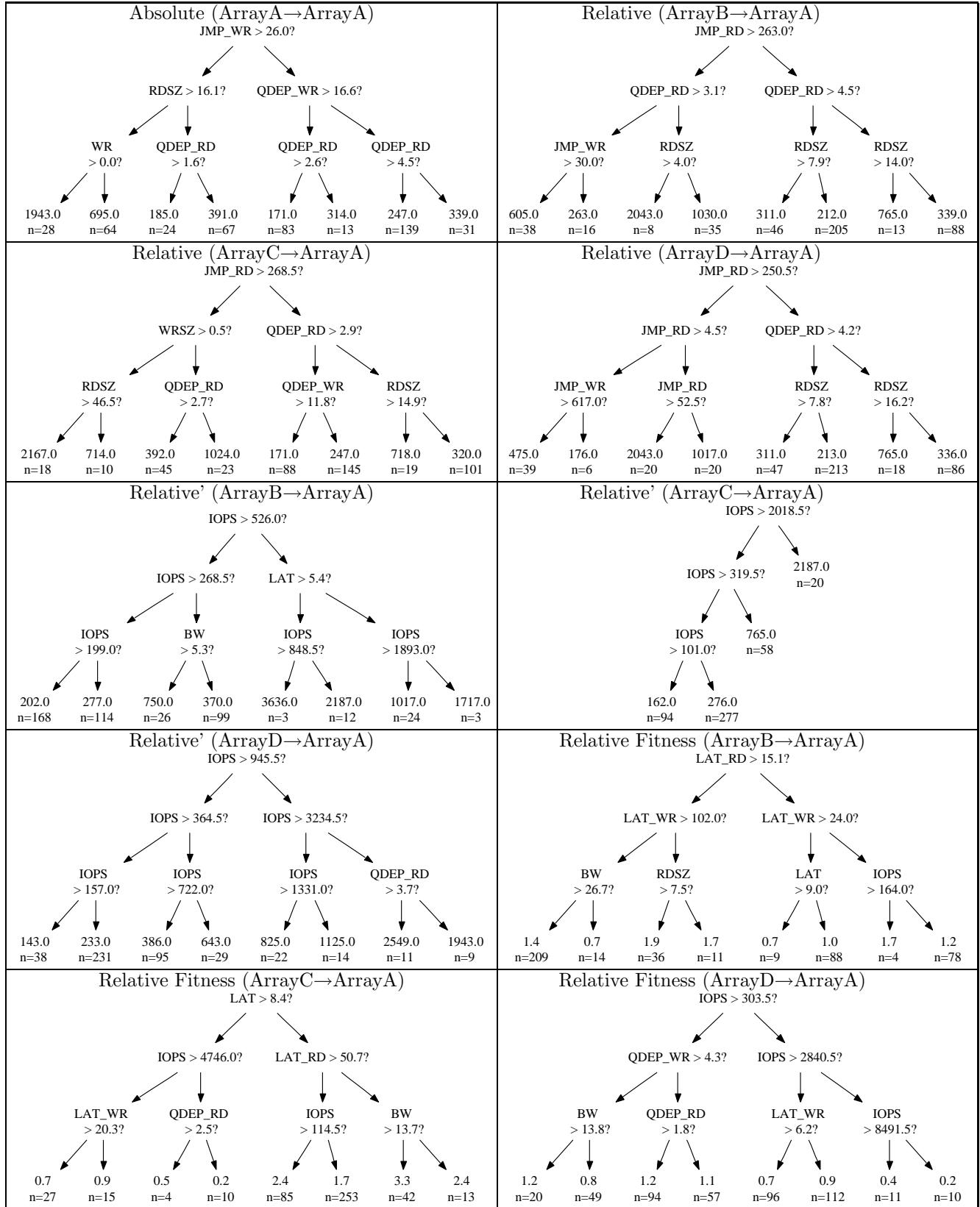


Table H.5: Throughput models of ArrayA.

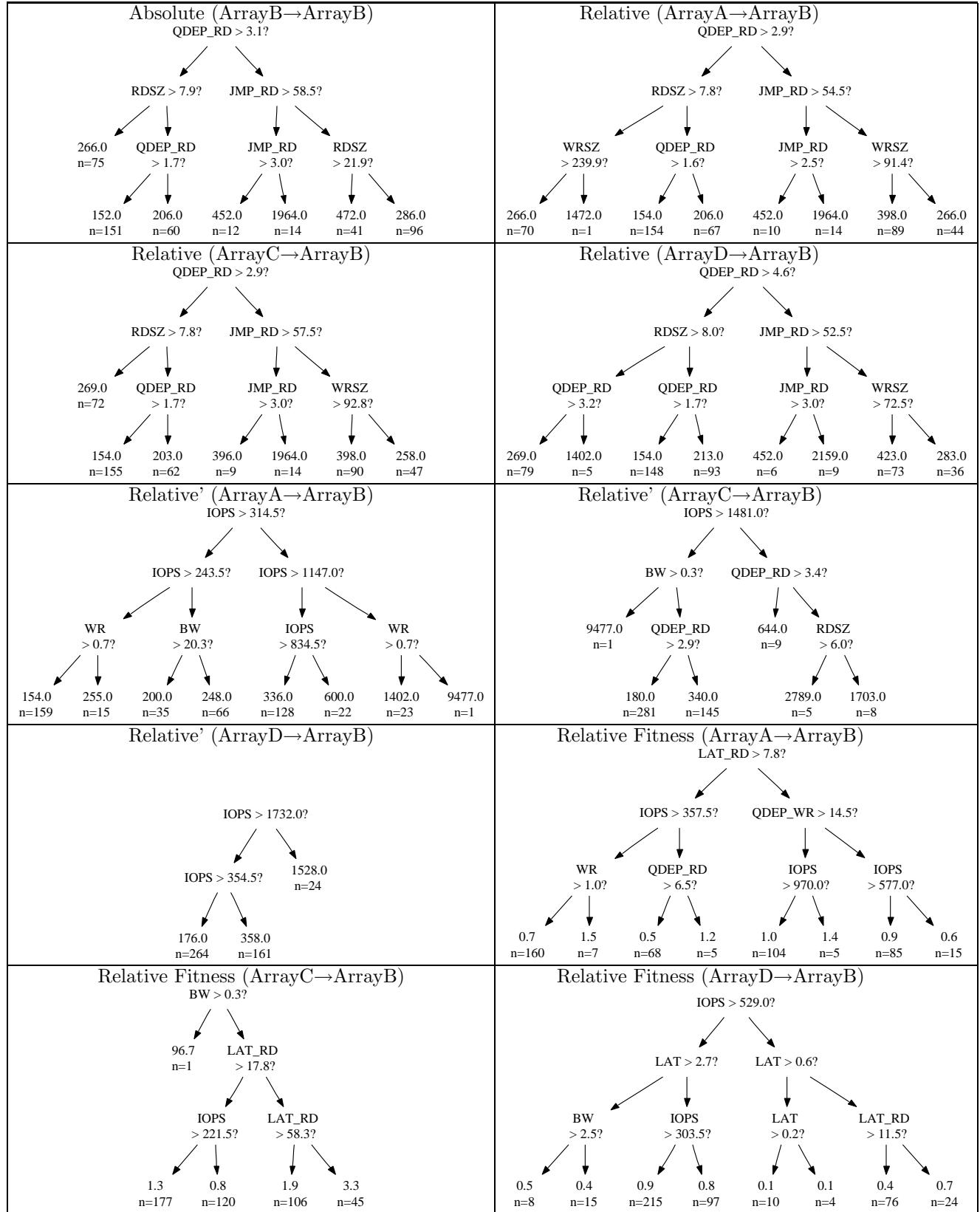


Table H.6: Throughput models of ArrayB.

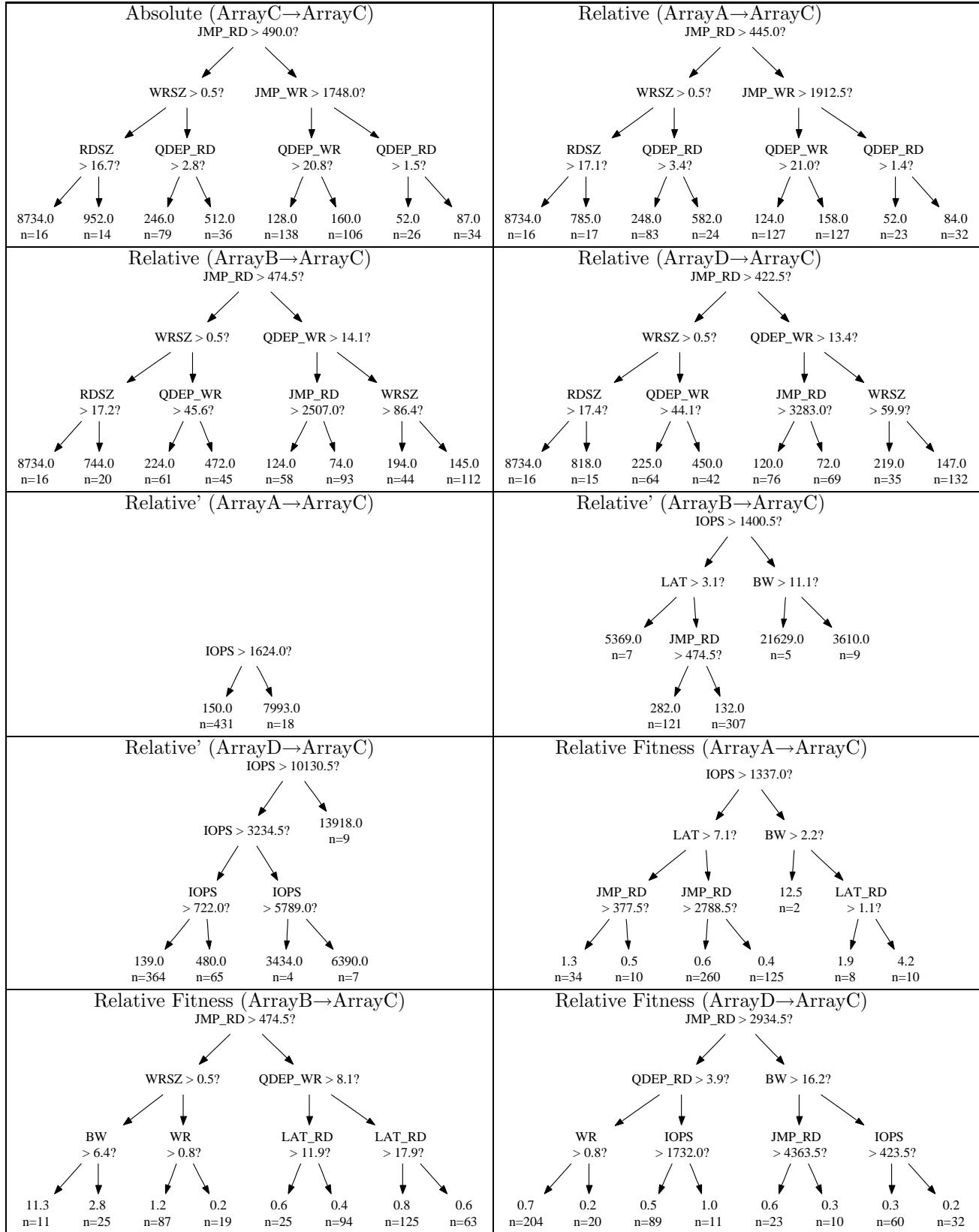


Table H.7: Throughput models of ArrayC.

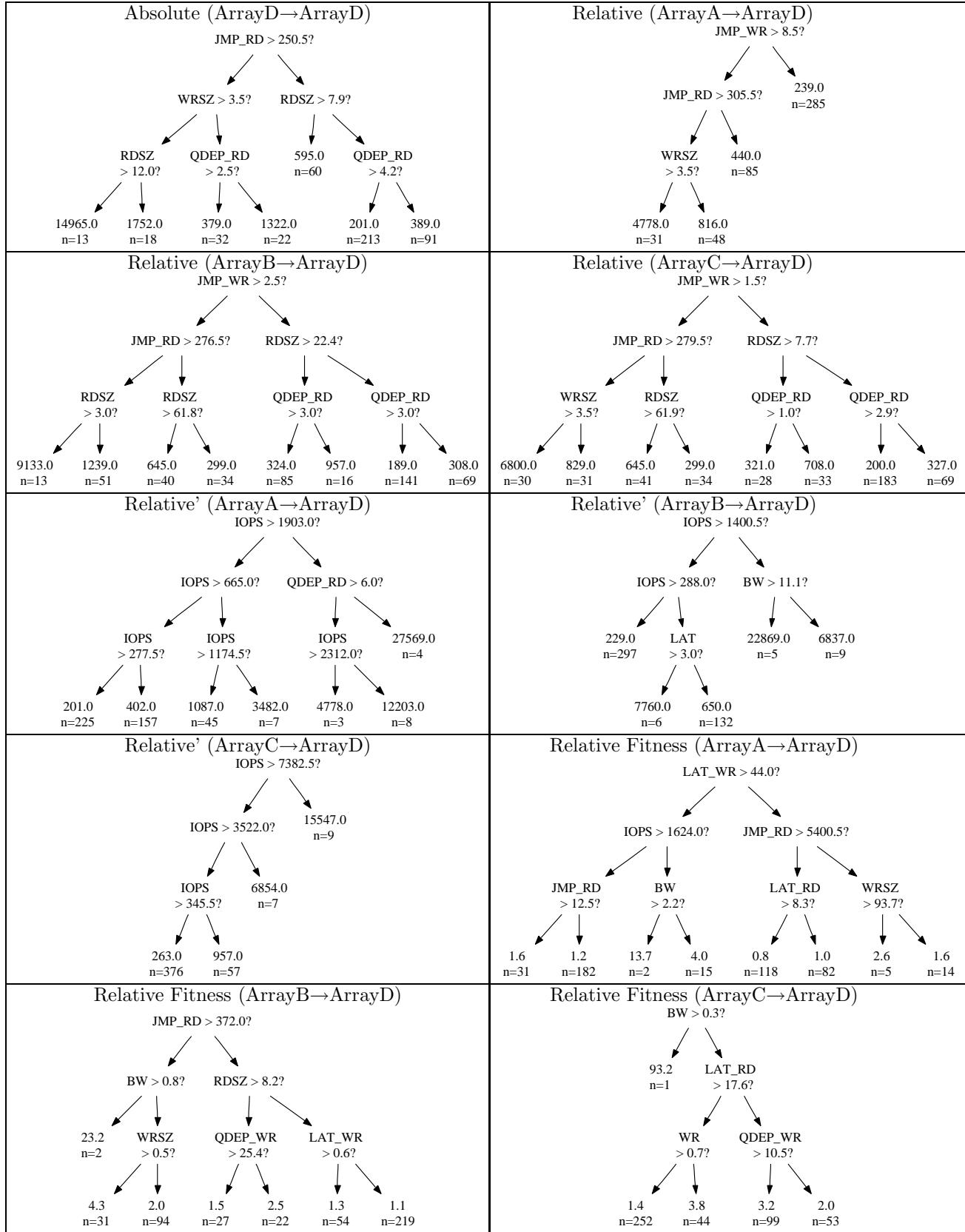


Table H.8: Throughput models of ArrayD.

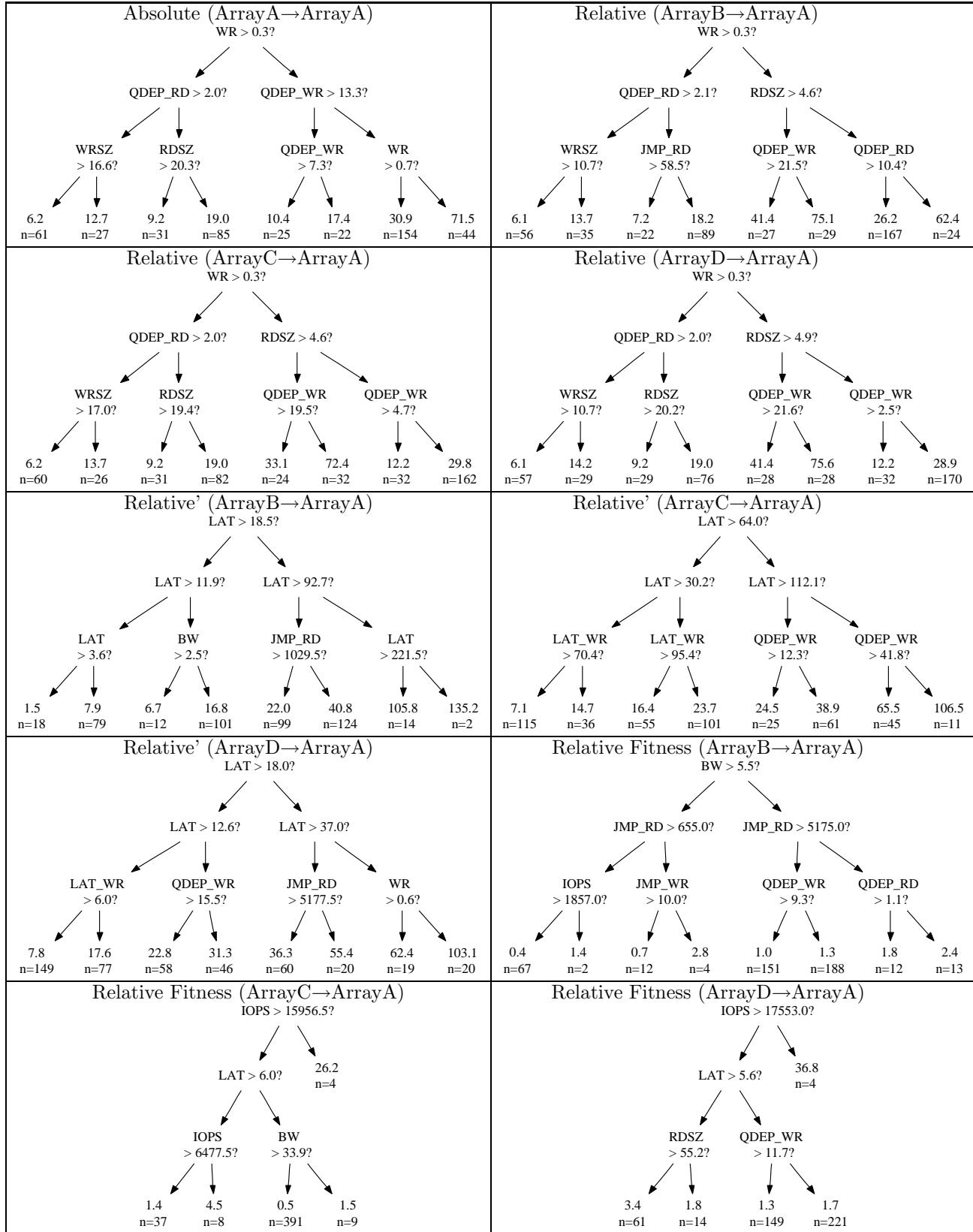


Table H.9: Latency models of ArrayA.

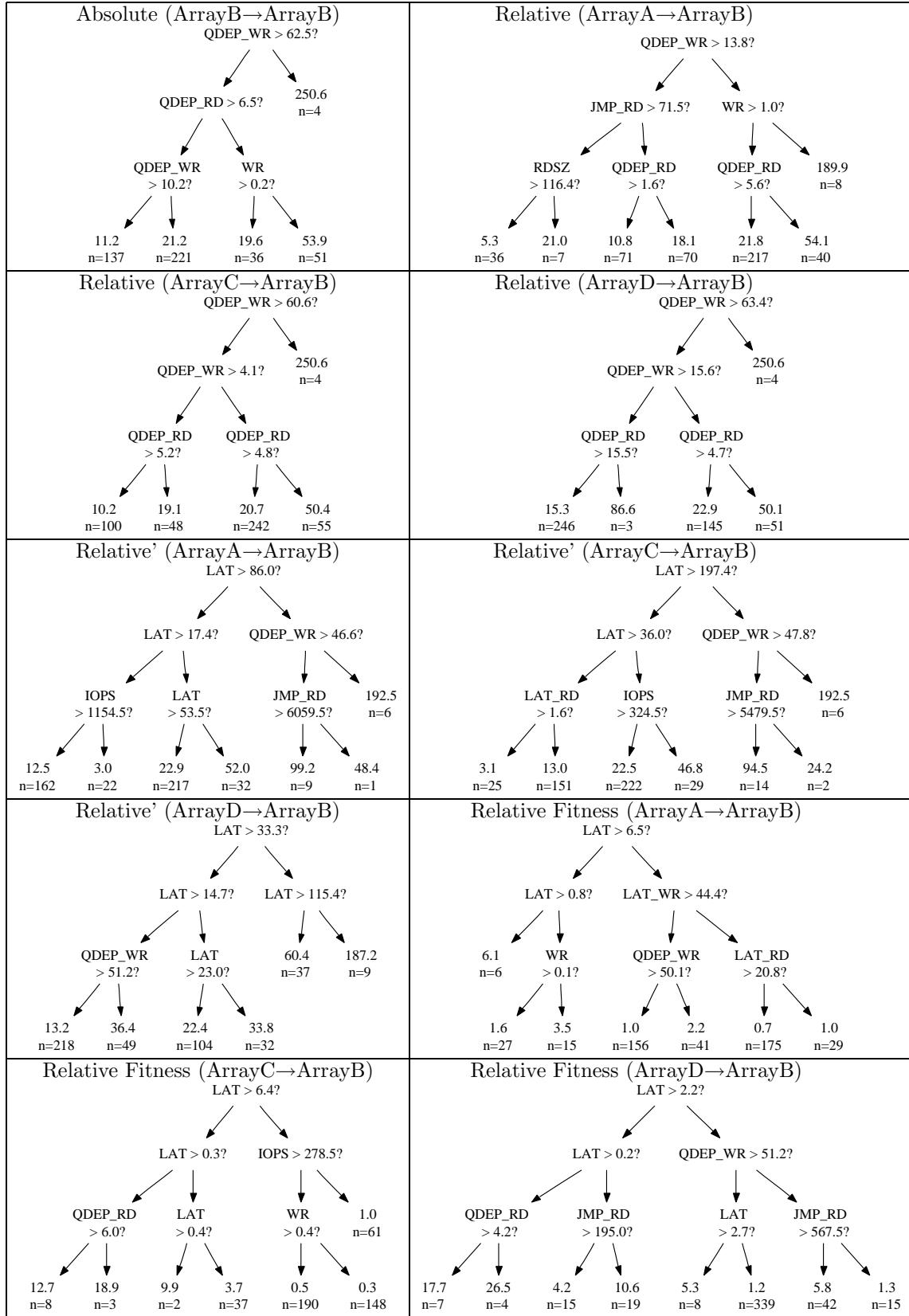


Table H.10: Latency models of ArrayB.

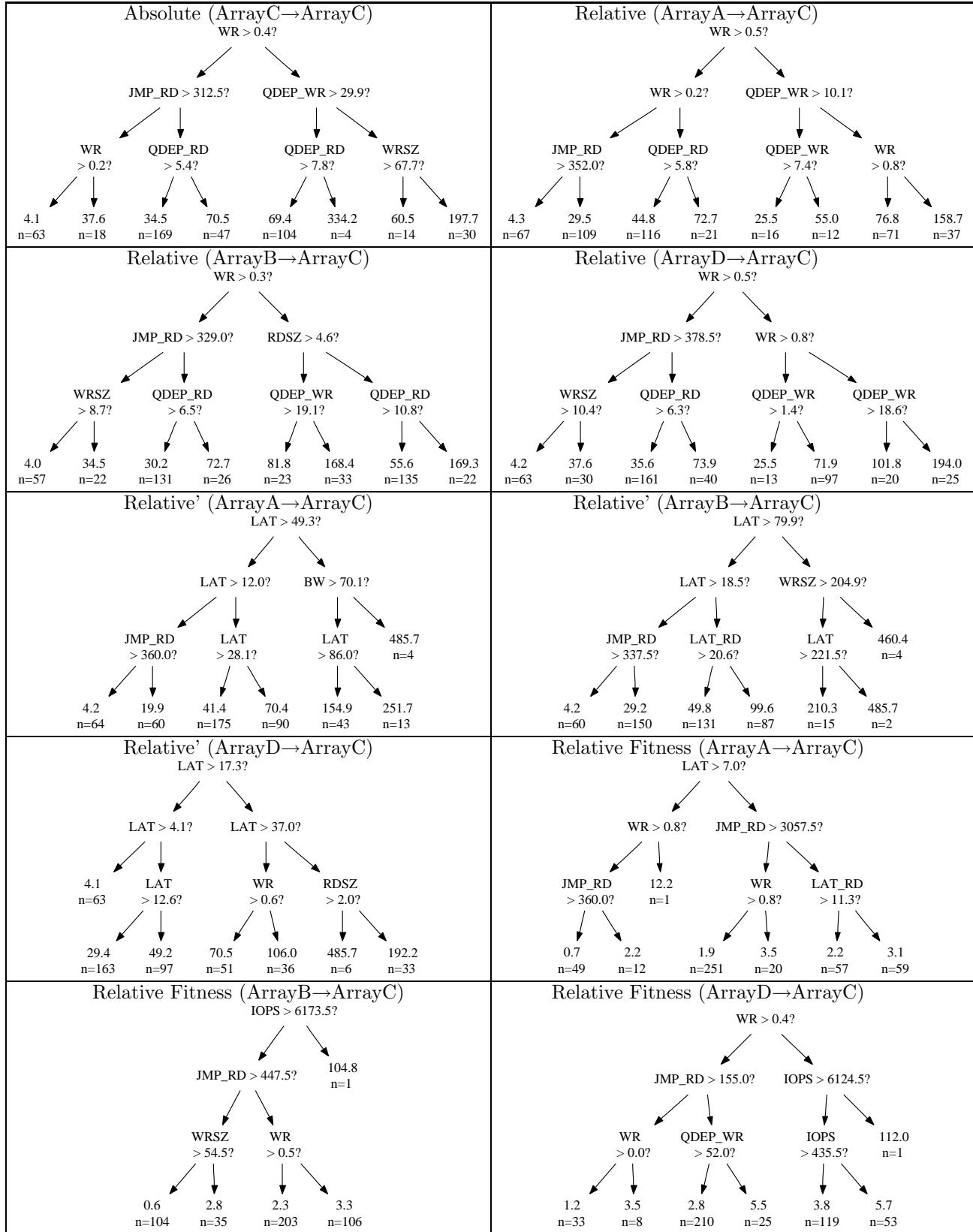


Table H.11: Latency models of ArrayC.

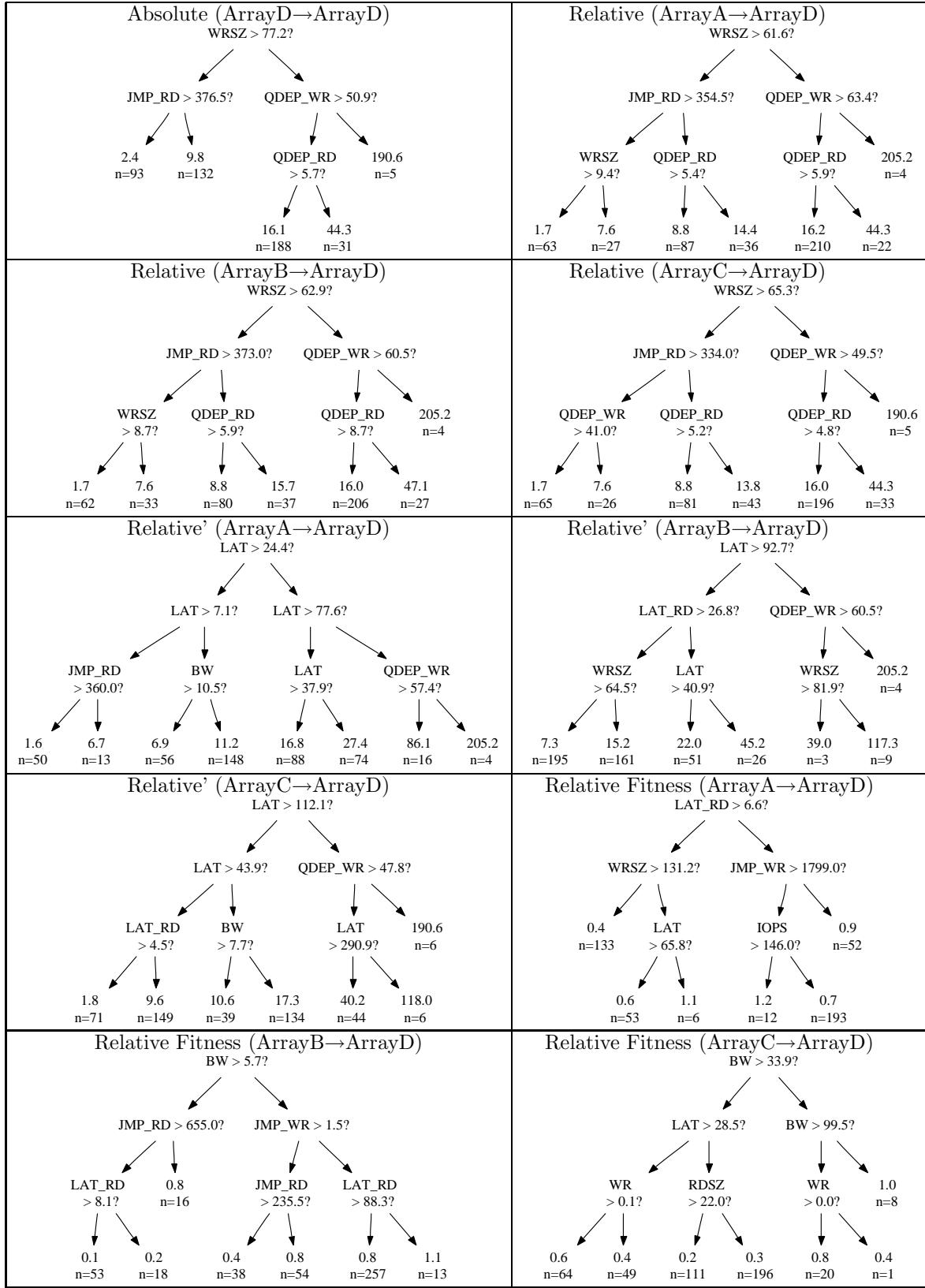


Table H.12: Latency models of ArrayD.