**SCATTER**

**128 x 128**

**Varying Depths of Cache**

**4 Level Cache**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 3894010

cache\_4

Number of accesses: 1473

Number of hits: 327

Number of misses: 1146

Miss Rate(%): 77.80040733197556

Hit Rate(%): 22.19959266802444

cache\_3

Number of accesses: 3823

Number of hits: 2274

Number of misses: 1549

Miss Rate(%): 40.517917865550615

Hit Rate(%): 59.482082134449385

cache\_2

Number of accesses: 33006

Number of hits: 28889

Number of misses: 4117

Miss Rate(%): 12.473489668545113

Hit Rate(%): 87.52651033145489

cache\_1

Number of accesses: 163314

Number of hits: 125383

Number of misses: 37931

Miss Rate(%): 23.22581040204759

Hit Rate(%): 76.77418959795241

AMATs:

{'cache\_1': 17.919492048982555,

'cache\_2': 72.84780059812653,

'cache\_3': 455.7489692838874,

'cache\_4': 878.0040733197557,

'mem': 1000}

**3 Level Cache**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 3916690

cache\_3

Number of accesses: 3516

Number of hits: 2046

Number of misses: 1470

Miss Rate(%): 41.80887372013652

Hit Rate(%): 58.19112627986348

cache\_2

Number of accesses: 25398

Number of hits: 21696

Number of misses: 3702

Miss Rate(%): 14.575950862272618

Hit Rate(%): 85.42404913772738

cache\_1

Number of accesses: 163314

Number of hits: 134779

Number of misses: 28535

Miss Rate(%): 17.472476333933404

Hit Rate(%): 82.5275236660666

AMATs:

{'cache\_1': 16.990174300296005,

'cache\_2': 91.5163597574397,

'cache\_3': 518.0887372013651,

'mem': 1000}

**2 Level Cache**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 163314

Total cycles taken: 7062586

cache\_2

Number of accesses: 37468

Number of hits: 33406

Number of misses: 4062

Miss Rate(%): 10.841251201024875

Hit Rate(%): 89.15874879897513

cache\_1

Number of accesses: 163314

Number of hits: 121621

Number of misses: 41693

Miss Rate(%): 25.529348371848098

Hit Rate(%): 74.47065162815191

AMATs:

{'cache\_1': 32.76170360926376, 'cache\_2': 124.41251201024875, 'mem': 1000}

**1 Level Cache**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 50494314

cache\_1

Number of accesses: 163314

Number of hits: 125383

Number of misses: 37931

Miss Rate(%): 23.22581040204759

Hit Rate(%): 76.77418959795241

AMATs:

{'cache\_1': 233.25810402047588, 'mem': 1000}

**Varying Associativity of L1 Cache**

**2-Way Associativity**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 4087938

cache\_3

Number of accesses: 3578

Number of hits: 2107

Number of misses: 1471

Miss Rate(%): 41.11235326998323

Hit Rate(%): 58.887646730016776

cache\_2

Number of accesses: 31511

Number of hits: 27800

Number of misses: 3711

Miss Rate(%): 11.776839833708863

Hit Rate(%): 88.22316016629114

cache\_1

Number of accesses: 163314

Number of hits: 129013

Number of misses: 34301

Miss Rate(%): 21.003098325924295

Hit Rate(%): 78.9969016740757

AMATs:

{'cache\_1': 17.00314270232046,

'cache\_2': 76.1941997984538,

'cache\_3': 511.1235326998323,

'mem': 1000}

**4-Way Associativity**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 4151650

cache\_3

Number of accesses: 3795

Number of hits: 2252

Number of misses: 1543

Miss Rate(%): 40.65876152832675

Hit Rate(%): 59.34123847167325

cache\_2

Number of accesses: 36100

Number of hits: 31970

Number of misses: 4130

Miss Rate(%): 11.4404432132964

Hit Rate(%): 88.5595567867036

cache\_1

Number of accesses: 163314

Number of hits: 121804

Number of misses: 41510

Miss Rate(%): 25.417294291977417

Hit Rate(%): 74.58270570802257

AMATs:

{'cache\_1': 19.797580730651493,

'cache\_2': 73.95586845207464,

'cache\_3': 506.5876152832675,

'mem': 1000}

**8-Way Associativity**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 3749362

cache\_3

Number of accesses: 3469

Number of hits: 2011

Number of misses: 1458

Miss Rate(%): 42.02940328624964

Hit Rate(%): 57.97059671375035

cache\_2

Number of accesses: 20595

Number of hits: 16793

Number of misses: 3802

Miss Rate(%): 18.460791454236468

Hit Rate(%): 81.53920854576353

cache\_1

Number of accesses: 163314

Number of hits: 139454

Number of misses: 23860

Miss Rate(%): 14.60989259953219

Hit Rate(%): 85.39010740046781

AMATs:

{'cache\_1': 17.37044256490066,

'cache\_2': 112.050396355582,

'cache\_3': 520.2940328624964,

'mem': 1000}

**Varying Block Size of L1 Cache**

**Block Size 16**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 4276086

cache\_3

Number of accesses: 3886

Number of hits: 2419

Number of misses: 1467

Miss Rate(%): 37.75090066906845

Hit Rate(%): 62.24909933093154

cache\_2

Number of accesses: 37468

Number of hits: 33406

Number of misses: 4062

Miss Rate(%): 10.841251201024875

Hit Rate(%): 89.15874879897513

cache\_1

Number of accesses: 163314

Number of hits: 121621

Number of misses: 41693

Miss Rate(%): 25.529348371848098

Hit Rate(%): 74.47065162815191

AMATs:

{'cache\_1': 18.3007162755589,

'cache\_2': 67.76795092285579,

'cache\_3': 477.5090066906845,

'mem': 1000}

**Block Size 32**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 163314

Total cycles taken: 3555318

cache\_3

Number of accesses: 3584

Number of hits: 2083

Number of misses: 1501

Miss Rate(%): 41.880580357142854

Hit Rate(%): 58.11941964285714

cache\_2

Number of accesses: 9148

Number of hits: 5369

Number of misses: 3779

Miss Rate(%): 41.30957586357674

Hit Rate(%): 58.69042413642326

cache\_1

Number of accesses: 163314

Number of hits: 152577

Number of misses: 10737

Miss Rate(%): 6.574451669789486

Hit Rate(%): 93.42554833021052

AMATs:

{'cache\_1': 16.142045468648572,

'cache\_2': 230.3164770109782,

'cache\_3': 518.8058035714286,

'mem': 1000}

**Block Size 64**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 163314

Total cycles taken: 3587126

cache\_3

Number of accesses: 2883

Number of hits: 1304

Number of misses: 1579

Miss Rate(%): 54.76933749566424

Hit Rate(%): 45.23066250433576

cache\_2

Number of accesses: 14152

Number of hits: 11030

Number of misses: 3122

Miss Rate(%): 22.06048615036744

Hit Rate(%): 77.93951384963256

cache\_1

Number of accesses: 163314

Number of hits: 148163

Number of misses: 15151

Miss Rate(%): 9.277220568965307

Hit Rate(%): 90.7227794310347

AMATs:

{'cache\_1': 15.740047635760046,

'cache\_2': 158.88430727915755,

'cache\_3': 647.6933749566424,

'mem': 1000}

**Block Size 128**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 163314

Total cycles taken: 3085046

cache\_3

Number of accesses: 2045

Number of hits: 481

Number of misses: 1564

Miss Rate(%): 76.47921760391198

Hit Rate(%): 23.52078239608802

cache\_2

Number of accesses: 3474

Number of hits: 1191

Number of misses: 2283

Miss Rate(%): 65.71675302245251

Hit Rate(%): 34.28324697754749

cache\_1

Number of accesses: 163314

Number of hits: 159055

Number of misses: 4259

Miss Rate(%): 2.607859705842732

Hit Rate(%): 97.39214029415727

AMATs:

{'cache\_1': 16.238072110217928,

'cache\_2': 584.313338485121,

'cache\_3': 864.7921760391198,

'mem': 1000}

**150 x 150**

**Varying Depths of Cache**

**4 Level Cache**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 167435

Total cycles taken: 4128911

cache\_4

Number of accesses: 1548

Number of hits: 311

Number of misses: 1237

Miss Rate(%): 79.90956072351422

Hit Rate(%): 20.09043927648579

cache\_3

Number of accesses: 3494

Number of hits: 1919

Number of misses: 1575

Miss Rate(%): 45.07727532913567

Hit Rate(%): 54.92272467086434

cache\_2

Number of accesses: 35676

Number of hits: 32061

Number of misses: 3615

Miss Rate(%): 10.132862428523378

Hit Rate(%): 89.86713757147662

cache\_1

Number of accesses: 167435

Number of hits: 128220

Number of misses: 39215

Miss Rate(%): 23.4210290560516

Hit Rate(%): 76.5789709439484

AMATs:

{'cache\_1': 16.73895913432505,

'cache\_2': 67.20011787978362,

'cache\_3': 505.28780234554927,

'cache\_4': 899.0956072351422,

'mem': 1000}

**3 Level Cache**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 167435

Total cycles taken: 4305903

cache\_3

Number of accesses: 3635

Number of hits: 2024

Number of misses: 1611

Miss Rate(%): 44.31911966987621

Hit Rate(%): 55.68088033012379

cache\_2

Number of accesses: 31738

Number of hits: 27911

Number of misses: 3827

Miss Rate(%): 12.058100699476967

Hit Rate(%): 87.94189930052303

cache\_1

Number of accesses: 167435

Number of hits: 132772

Number of misses: 34663

Miss Rate(%): 20.70236211066981

Hit Rate(%): 79.29763788933019

AMATs:

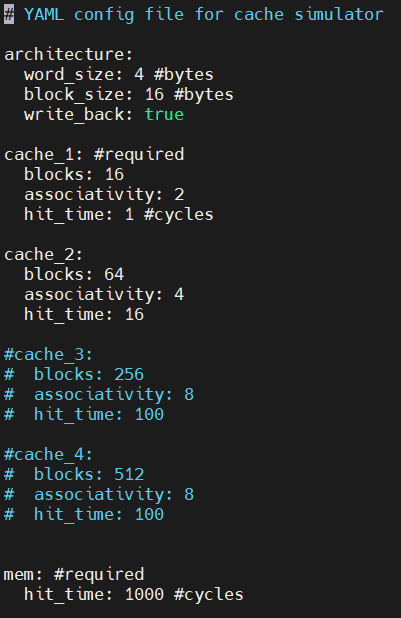
{'cache\_1': 17.872123173890806,

'cache\_2': 81.49854148863074,

'cache\_3': 543.191196698762,

'mem': 1000}

**2 Level Cache**



Simulation complete

Number of instructions: 167435

Total cycles taken: 6137707

cache\_2

Number of accesses: 36271

Number of hits: 32631

Number of misses: 3640

Miss Rate(%): 10.035565603374597

Hit Rate(%): 89.9644343966254

cache\_1

Number of accesses: 167435

Number of hits: 125974

Number of misses: 41461

Miss Rate(%): 24.762445127960103

Hit Rate(%): 75.2375548720399

AMATs:

{'cache\_1': 29.812505478634343, 'cache\_2': 116.35565603374596, 'mem': 1000}

**1 Level Cache**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 57216435

cache\_1

Number of accesses: 167435

Number of hits: 124246

Number of misses: 43189

Miss Rate(%): 25.79448741302595

Hit Rate(%): 74.20551258697405

AMATs:

{'cache\_1': 258.9448741302595, 'mem': 1000}

**Varying Associativity of L1 Cache**

**2 Way Associativity**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 167435

Total cycles taken: 4342911

cache\_3

Number of accesses: 3494

Number of hits: 1928

Number of misses: 1566

Miss Rate(%): 44.819690898683454

Hit Rate(%): 55.18030910131654

cache\_2

Number of accesses: 35676

Number of hits: 32061

Number of misses: 3615

Miss Rate(%): 10.132862428523378

Hit Rate(%): 89.86713757147662

cache\_1

Number of accesses: 167435

Number of hits: 128220

Number of misses: 39215

Miss Rate(%): 23.4210290560516

Hit Rate(%): 76.5789709439484

AMATs:

{'cache\_1': 17.757286915408795,

'cache\_2': 71.54803862505347,

'cache\_3': 548.1969089868346,

'mem': 1000}

**4 Way Associativity**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 4090515

cache\_3

Number of accesses: 3373

Number of hits: 1683

Number of misses: 1690

Miss Rate(%): 50.10376519418915

Hit Rate(%): 49.89623480581085

cache\_2

Number of accesses: 27676

Number of hits: 23990

Number of misses: 3686

Miss Rate(%): 13.31839861251626

Hit Rate(%): 86.68160138748374

cache\_1

Number of accesses: 167435

Number of hits: 135160

Number of misses: 32275

Miss Rate(%): 19.276137008391316

Hit Rate(%): 80.72386299160868

AMATs:

{'cache\_1': 19.514457860264518,

'cache\_2': 96.04859029692918,

'cache\_3': 601.0376519418915,

'mem': 1000}

**8 Way Associativity**

A screen shot of a computer

Description automatically generated

Simulation complete

Number of instructions: 167435

Total cycles taken: 4265699

cache\_3

Number of accesses: 3767

Number of hits: 2091

Number of misses: 1676

Miss Rate(%): 44.49163790814972

Hit Rate(%): 55.50836209185028

cache\_2

Number of accesses: 32460

Number of hits: 28322

Number of misses: 4138

Miss Rate(%): 12.747997535428219

Hit Rate(%): 87.25200246457177

cache\_1

Number of accesses: 167435

Number of hits: 128580

Number of misses: 38855

Miss Rate(%): 23.206020246662884

Hit Rate(%): 76.79397975333711

AMATs:

{'cache\_1': 20.833240225097878,

'cache\_2': 85.46592657545395,

'cache\_3': 544.9163790814972,

'mem': 1000}

**Varying Block Size of L1 Cache**

**Block Size 16**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 4373335

cache\_3

Number of accesses: 3855

Number of hits: 2297

Number of misses: 1558

Miss Rate(%): 40.41504539559014

Hit Rate(%): 59.58495460440986

cache\_2

Number of accesses: 35496

Number of hits: 31467

Number of misses: 4029

Miss Rate(%): 11.350574712643677

Hit Rate(%): 88.64942528735632

cache\_1

Number of accesses: 167435

Number of hits: 129566

Number of misses: 37869

Miss Rate(%): 22.617135007614895

Hit Rate(%): 77.38286499238511

AMATs:

{'cache\_1': 17.561165044040305,

'cache\_2': 73.22397394039686,

'cache\_3': 504.1504539559014,

'mem': 1000}

**Block Size 32**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 3783927

cache\_3

Number of accesses: 3516

Number of hits: 1882

Number of misses: 1634

Miss Rate(%): 46.473265073947665

Hit Rate(%): 53.526734926052335

cache\_2

Number of accesses: 10239

Number of hits: 6326

Number of misses: 3913

Miss Rate(%): 38.216622717062215

Hit Rate(%): 61.78337728293779

cache\_1

Number of accesses: 167435

Number of hits: 155358

Number of misses: 12077

Miss Rate(%): 7.212948308298743

Hit Rate(%): 92.78705169170127

AMATs:

{'cache\_1': 17.72118274194774,

'cache\_2': 231.82174649317045,

'cache\_3': 564.7326507394766,

'mem': 1000}

**Block Size 64**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 3499799

cache\_3

Number of accesses: 2568

Number of hits: 850

Number of misses: 1718

Miss Rate(%): 66.90031152647975

Hit Rate(%): 33.09968847352025

cache\_2

Number of accesses: 7299

Number of hits: 4455

Number of misses: 2844

Miss Rate(%): 38.964241676942045

Hit Rate(%): 61.035758323057955

cache\_1

Number of accesses: 167435

Number of hits: 158839

Number of misses: 8596

Miss Rate(%): 5.133932570848389

Hit Rate(%): 94.86606742915161

AMATs:

{'cache\_1': 17.204551337244688,

'cache\_2': 315.6362323349889,

'cache\_3': 769.0031152647975,

'mem': 1000}

**Block Size 128**

**A screen shot of a computer

Description automatically generated**

Simulation complete

Number of instructions: 167435

Total cycles taken: 3369131

cache\_3

Number of accesses: 2238

Number of hits: 486

Number of misses: 1752

Miss Rate(%): 78.28418230563003

Hit Rate(%): 21.715817694369974

cache\_2

Number of accesses: 4200

Number of hits: 1710

Number of misses: 2490

Miss Rate(%): 59.285714285714285

Hit Rate(%): 40.714285714285715

cache\_1

Number of accesses: 167435

Number of hits: 162341

Number of misses: 5094

Miss Rate(%): 3.04237465285036

Hit Rate(%): 96.95762534714964

AMATs:

{'cache\_1': 17.41054091233058,

'cache\_2': 539.3990808119494,

'cache\_3': 882.8418230563002,

'mem': 1000}