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**Q1)**  Simulation for 4 hours with 1000 users. 5 runs.

**1st run**

**After 1 hour**

**For Base station 1**

Channels in use : 11

Number of calls attempted : 517

Number of successful connections : 517

Number of successful calls : 158

Handoffs attempted : 120

Handoffs successfully completed : 3

Failed Handoffs : 101

Calls dropped : 337

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 10

**For Base station 2**

Channels in use : 8

Number of calls attempted : 475

Number of successful connections : 475

Number of successful calls : 115

Handoffs attempted : 99

Handoffs successfully completed : 0

Failed Handoffs : 90

Calls dropped : 340

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 11

**After 2 hour**

**For Base station 1**

Channels in use : 5

Number of calls attempted : 987

Number of successful connections : 987

Number of successful calls : 303

Handoffs attempted : 224

Handoffs successfully completed : 5

Failed Handoffs : 209

Calls dropped : 667

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 17

**For Base station 2**

Channels in use : 11

Number of calls attempted : 930

Number of successful connections : 930

Number of successful calls : 237

Handoffs attempted : 227

Handoffs successfully completed : 2

Failed Handoffs : 214

Calls dropped : 665

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 16

**After 3 hour**

**For Base station 1**

Channels in use : 3

Number of calls attempted : 1481

Number of successful connections : 1481

Number of successful calls : 462

Handoffs attempted : 319

Handoffs successfully completed : 7

Failed Handoffs : 310

Calls dropped : 998

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 30

**For Base station 2**

Channels in use : 3

Number of calls attempted : 1389

Number of successful connections : 1389

Number of successful calls : 356

Handoffs attempted : 350

Handoffs successfully completed : 3

Failed Handoffs : 325

Calls dropped : 982

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 24

**End of simulation summary report**

**For Base station 1**

Channels in use : 6

Number of calls attempted : 1985

Number of successful connections : 1985

Number of successful calls : 610

Handoffs attempted : 438

Handoffs successfully completed : 11

Failed Handoffs : 415

Calls dropped : 1344

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 38

**For Base station 2**

Channels in use : 4

Number of calls attempted : 1860

Number of successful connections : 1860

Number of successful calls : 518

Handoffs attempted : 470

Handoffs successfully completed : 6

Failed Handoffs : 426

Calls dropped : 1369

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 36

**2nd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 12

Number of calls attempted : 482

Number of successful connections : 482

Number of successful calls : 144

Handoffs attempted : 108

Handoffs successfully completed : 1

Failed Handoffs : 101

Calls dropped : 315

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 16

**For Base station 2**

Channels in use : 10

Number of calls attempted : 499

Number of successful connections : 499

Number of successful calls : 131

Handoffs attempted : 117

Handoffs successfully completed : 1

Failed Handoffs : 110

Calls dropped : 323

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 10

**After 2 hour**

**For Base station 1**

Channels in use : 12

Number of calls attempted : 966

Number of successful connections : 966

Number of successful calls : 294

Handoffs attempted : 233

Handoffs successfully completed : 2

Failed Handoffs : 197

Calls dropped : 621

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 25

**For Base station 2**

Channels in use : 10

Number of calls attempted : 979

Number of successful connections : 979

Number of successful calls : 267

Handoffs attempted : 245

Handoffs successfully completed : 5

Failed Handoffs : 221

Calls dropped : 686

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 24

**After 3 hour**

**For Base station 1**

Channels in use : 9

Number of calls attempted : 1459

Number of successful connections : 1459

Number of successful calls : 449

Handoffs attempted : 358

Handoffs successfully completed : 4

Failed Handoffs : 310

Calls dropped : 987

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 31

**For Base station 2**

Channels in use : 9

Number of calls attempted : 1460

Number of successful connections : 1460

Number of successful calls : 411

Handoffs attempted : 362

Handoffs successfully completed : 8

Failed Handoffs : 323

Calls dropped : 1044

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 38

**End of simulation summary report**

**For Base station 1**

Channels in use : 5

Number of calls attempted : 1928

Number of successful connections : 1928

Number of successful calls : 580

Handoffs attempted : 465

Handoffs successfully completed : 6

Failed Handoffs : 424

Calls dropped : 1327

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 37

**For Base station 2**

Channels in use : 7

Number of calls attempted : 1942

Number of successful connections : 1942

Number of successful calls : 545

Handoffs attempted : 464

Handoffs successfully completed : 12

Failed Handoffs : 419

Calls dropped : 1401

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 57

**3rd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 8

Number of calls attempted : 477

Number of successful connections : 477

Number of successful calls : 149

Handoffs attempted : 93

Handoffs successfully completed : 2

Failed Handoffs : 88

Calls dropped : 331

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 12

**For Base station 2**

Channels in use : 11

Number of calls attempted : 507

Number of successful connections : 507

Number of successful calls : 135

Handoffs attempted : 116

Handoffs successfully completed : 2

Failed Handoffs : 104

Calls dropped : 313

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 21

**After 2 hour**

**For Base station 1**

Channels in use : 7

Number of calls attempted : 984

Number of successful connections : 984

Number of successful calls : 306

Handoffs attempted : 191

Handoffs successfully completed : 3

Failed Handoffs : 147

Calls dropped : 660

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 34

**For Base station 2**

Channels in use : 4

Number of calls attempted : 985

Number of successful connections : 985

Number of successful calls : 281

Handoffs attempted : 245

Handoffs successfully completed : 5

Failed Handoffs : 226

Calls dropped : 665

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 30

**After 3 hour**

**For Base station 1**

Channels in use : 12

Number of calls attempted : 1450

Number of successful connections : 1450

Number of successful calls : 456

Handoffs attempted : 290

Handoffs successfully completed : 4

Failed Handoffs : 263

Calls dropped : 1003

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 44

**For Base station 2**

Channels in use : 8

Number of calls attempted : 1467

Number of successful connections : 1467

Number of successful calls : 422

Handoffs attempted : 347

Handoffs successfully completed : 5

Failed Handoffs : 313

Calls dropped : 1013

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 42

**End of simulation summary report**

**For Base station 1**

Channels in use : 4

Number of calls attempted : 1911

Number of successful connections : 1911

Number of successful calls : 581

Handoffs attempted : 405

Handoffs successfully completed : 8

Failed Handoffs : 386

Calls dropped : 1367

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 62

**For Base station 2**

Channels in use : 8

Number of calls attempted : 1940

Number of successful connections : 1940

Number of successful calls : 560

Handoffs attempted : 459

Handoffs successfully completed : 6

Failed Handoffs : 435

Calls dropped : 1364

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 52

**4th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 4

Number of calls attempted : 491

Number of successful connections : 491

Number of successful calls : 141

Handoffs attempted : 117

Handoffs successfully completed : 4

Failed Handoffs : 90

Calls dropped : 330

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 6

**For Base station 2**

Channels in use : 4

Number of calls attempted : 483

Number of successful connections : 483

Number of successful calls : 144

Handoffs attempted : 122

Handoffs successfully completed : 3

Failed Handoffs : 105

Calls dropped : 323

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 9

**After 2 hour**

**For Base station 1**

Channels in use : 9

Number of calls attempted : 1009

Number of successful connections : 1009

Number of successful calls : 309

Handoffs attempted : 221

Handoffs successfully completed : 5

Failed Handoffs : 198

Calls dropped : 702

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 15

**For Base station 2**

Channels in use : 6

Number of calls attempted : 968

Number of successful connections : 968

Number of successful calls : 298

Handoffs attempted : 242

Handoffs successfully completed : 4

Failed Handoffs : 211

Calls dropped : 640

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 17

**After 3 hour**

**For Base station 1**

Channels in use : 4

Number of calls attempted : 1497

Number of successful connections : 1497

Number of successful calls : 449

Handoffs attempted : 340

Handoffs successfully completed : 7

Failed Handoffs : 313

Calls dropped : 1021

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 25

**For Base station 2**

Channels in use : 6

Number of calls attempted : 1460

Number of successful connections : 1460

Number of successful calls : 441

Handoffs attempted : 354

Handoffs successfully completed : 4

Failed Handoffs : 309

Calls dropped : 969

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 33

**End of simulation summary report**

**For Base station 1**

Channels in use : 6

Number of calls attempted : 1954

Number of successful connections : 1954

Number of successful calls : 584

Handoffs attempted : 446

Handoffs successfully completed : 9

Failed Handoffs : 401

Calls dropped : 1327

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 41

**For Base station 2**

Channels in use : 9

Number of calls attempted : 1945

Number of successful connections : 1945

Number of successful calls : 595

Handoffs attempted : 464

Handoffs successfully completed : 6

Failed Handoffs : 433

Calls dropped : 1304

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 42

**5th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 9

Number of calls attempted : 471

Number of successful connections : 471

Number of successful calls : 145

Handoffs attempted : 100

Handoffs successfully completed : 2

Failed Handoffs : 79

Calls dropped : 335

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 14

**For Base station 2**

Channels in use : 10

Number of calls attempted : 514

Number of successful connections : 514

Number of successful calls : 152

Handoffs attempted : 106

Handoffs successfully completed : 4

Failed Handoffs : 83

Calls dropped : 345

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 15

**After 2 hour**

**For Base station 1**

Channels in use : 5

Number of calls attempted : 956

Number of successful connections : 956

Number of successful calls : 286

Handoffs attempted : 226

Handoffs successfully completed : 7

Failed Handoffs : 187

Calls dropped : 680

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 25

**For Base station 2**

Channels in use : 6

Number of calls attempted : 961

Number of successful connections : 961

Number of successful calls : 279

Handoffs attempted : 217

Handoffs successfully completed : 7

Failed Handoffs : 174

Calls dropped : 697

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 25

**After 3 hour**

**For Base station 1**

Channels in use : 11

Number of calls attempted : 1469

Number of successful connections : 1469

Number of successful calls : 452

Handoffs attempted : 325

Handoffs successfully completed : 10

Failed Handoffs : 289

Calls dropped : 1033

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 45

**For Base station 2**

Channels in use : 4

Number of calls attempted : 1374

Number of successful connections : 1374

Number of successful calls : 401

Handoffs attempted : 327

Handoffs successfully completed : 11

Failed Handoffs : 301

Calls dropped : 1025

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 37

**End of simulation summary report**

**For Base station 1**

Channels in use : 9

Number of calls attempted : 1965

Number of successful connections : 1965

Number of successful calls : 609

Handoffs attempted : 432

Handoffs successfully completed : 12

Failed Handoffs : 399

Calls dropped : 1342

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 61

**For Base station 2**

Channels in use : 10

Number of calls attempted : 1839

Number of successful connections : 1839

Number of successful calls : 526

Handoffs attempted : 432

Handoffs successfully completed : 14

Failed Handoffs : 411

Calls dropped : 1366

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 46

**Sum of Results**

**For Base station 1**

Number of calls attempted : 9743

Number of successful connections : 9743

Number of successful calls : 2964

Handoffs attempted : 2186

Handoffs successfully completed : 46

Failed Handoffs : 2025

Calls dropped : 6707

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 239

Percent of call attempts that are dropped – 68.84% (GOS = 0.68)

Predominant reason for call blockage – Due to Signal Strength

**For Base station 2**

Number of calls attempted : 9526

Number of successful connections : 9526

Number of successful calls : 2744

Handoffs attempted : 2289

Handoffs successfully completed : 44

Failed Handoffs : 2124

Calls dropped : 6804

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 233

Percent of call attempts that are dropped – 71.42% (GOS = 0.71)

Predominant reason for call blockage – Due to Signal Strength

Summary – Current system cannot accommodate the given users with a 0.01 GOS, because that would mean 1% call dropped out of all attempts.

**Q2)** Simulation for 4 hours with 3000 users. 5 runs.

**1st Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 21

Number of calls attempted : 1540

Number of successful connections : 1489

Number of successful calls : 457

Handoffs attempted : 360

Handoffs successfully completed : 14

Failed Handoffs : 341

Calls dropped : 1044

Calls blocked because of lack of channels : 68

Calls blocked because of signal strength : 39

**For Base station 2**

Channels in use : 27

Number of calls attempted : 1424

Number of successful connections : 1368

Number of successful calls : 371

Handoffs attempted : 349

Handoffs successfully completed : 8

Failed Handoffs : 320

Calls dropped : 1025

Calls blocked because of lack of channels : 66

Calls blocked because of signal strength : 27

**After 2 hour**

**For Base station 1**

Channels in use : 23

Number of calls attempted : 3062

Number of successful connections : 2951

Number of successful calls : 880

Handoffs attempted : 713

Handoffs successfully completed : 17

Failed Handoffs : 674

Calls dropped : 2136

Calls blocked because of lack of channels : 143

Calls blocked because of signal strength : 66

**For Base station 2**

Channels in use : 28

Number of calls attempted : 2863

Number of successful connections : 2752

Number of successful calls : 801

Handoffs attempted : 689

Handoffs successfully completed : 14

Failed Handoffs : 636

Calls dropped : 2014

Calls blocked because of lack of channels : 144

Calls blocked because of signal strength : 62

**After 3 hour**

**For Base station 1**

Channels in use : 22

Number of calls attempted : 4522

Number of successful connections : 4356

Number of successful calls : 1298

Handoffs attempted : 1078

Handoffs successfully completed : 22

Failed Handoffs : 1017

Calls dropped : 3175

Calls blocked because of lack of channels : 209

Calls blocked because of signal strength : 96

**For Base station 2**

Channels in use : 25

Number of calls attempted : 4295

Number of successful connections : 4140

Number of successful calls : 1219

Handoffs attempted : 1042

Handoffs successfully completed : 26

Failed Handoffs : 994

Calls dropped : 3015

Calls blocked because of lack of channels : 209

Calls blocked because of signal strength : 88

**End of simulation summary report**

**For Base station 1**

Channels in use : 18

Number of calls attempted : 5937

Number of successful connections : 5738

Number of successful calls : 1714

Handoffs attempted : 1426

Handoffs successfully completed : 31

Failed Handoffs : 1333

Calls dropped : 4169

Calls blocked because of lack of channels : 256

Calls blocked because of signal strength : 132

**For Base station 2**

Channels in use : 22

Number of calls attempted : 5748

Number of successful connections : 5575

Number of successful calls : 1657

Handoffs attempted : 1410

Handoffs successfully completed : 31

Failed Handoffs : 1368

Calls dropped : 4032

Calls blocked because of lack of channels : 240

Calls blocked because of signal strength : 129

**2nd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 28

Number of calls attempted : 1518

Number of successful connections : 1448

Number of successful calls : 429

Handoffs attempted : 367

Handoffs successfully completed : 13

Failed Handoffs : 334

Calls dropped : 1043

Calls blocked because of lack of channels : 76

Calls blocked because of signal strength : 36

**For Base station 2**

Channels in use : 26

Number of calls attempted : 1422

Number of successful connections : 1386

Number of successful calls : 400

Handoffs attempted : 307

Handoffs successfully completed : 9

Failed Handoffs : 268

Calls dropped : 1002

Calls blocked because of lack of channels : 45

Calls blocked because of signal strength : 40

**After 2 hour**

**For Base station 1**

Channels in use : 16

Number of calls attempted : 3018

Number of successful connections : 2887

Number of successful calls : 870

Handoffs attempted : 771

Handoffs successfully completed : 19

Failed Handoffs : 723

Calls dropped : 2110

Calls blocked because of lack of channels : 153

Calls blocked because of signal strength : 62

**For Base station 2**

Channels in use : 23

Number of calls attempted : 2836

Number of successful connections : 2765

Number of successful calls : 806

Handoffs attempted : 616

Handoffs successfully completed : 21

Failed Handoffs : 569

Calls dropped : 1998

Calls blocked because of lack of channels : 94

Calls blocked because of signal strength : 70

**After 3 hour**

**For Base station 1**

Channels in use : 25

Number of calls attempted : 4466

Number of successful connections : 4289

Number of successful calls : 1282

Handoffs attempted : 1141

Handoffs successfully completed : 26

Failed Handoffs : 1094

Calls dropped : 3137

Calls blocked because of lack of channels : 206

Calls blocked because of signal strength : 99

**For Base station 2**

Channels in use : 23

Number of calls attempted : 4277

Number of successful connections : 4178

Number of successful calls : 1234

Handoffs attempted : 956

Handoffs successfully completed : 32

Failed Handoffs : 901

Calls dropped : 3004

Calls blocked because of lack of channels : 133

Calls blocked because of signal strength : 103

**End of simulation summary report**

**For Base station 1**

Channels in use : 17

Number of calls attempted : 5922

Number of successful connections : 5705

Number of successful calls : 1701

Handoffs attempted : 1522

Handoffs successfully completed : 35

Failed Handoffs : 1448

Calls dropped : 4175

Calls blocked because of lack of channels : 258

Calls blocked because of signal strength : 124

**For Base station 2**

Channels in use : 24

Number of calls attempted : 5687

Number of successful connections : 5561

Number of successful calls : 1655

Handoffs attempted : 1280

Handoffs successfully completed : 42

Failed Handoffs : 1214

Calls dropped : 3983

Calls blocked because of lack of channels : 173

Calls blocked because of signal strength : 132

**3rd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 18

Number of calls attempted : 1411

Number of successful connections : 1370

Number of successful calls : 416

Handoffs attempted : 324

Handoffs successfully completed : 6

Failed Handoffs : 296

Calls dropped : 974

Calls blocked because of lack of channels : 51

Calls blocked because of signal strength : 45

**For Base station 2**

Channels in use : 15

Number of calls attempted : 1506

Number of successful connections : 1448

Number of successful calls : 390

Handoffs attempted : 322

Handoffs successfully completed : 8

Failed Handoffs : 301

Calls dropped : 1085

Calls blocked because of lack of channels : 73

Calls blocked because of signal strength : 32

**After 2 hour**

**For Base station 1**

Channels in use : 30

Number of calls attempted : 2938

Number of successful connections : 2858

Number of successful calls : 868

Handoffs attempted : 709

Handoffs successfully completed : 17

Failed Handoffs : 668

Calls dropped : 2025

Calls blocked because of lack of channels : 106

Calls blocked because of signal strength : 78

**For Base station 2**

Channels in use : 30

Number of calls attempted : 3040

Number of successful connections : 2886

Number of successful calls : 810

Handoffs attempted : 637

Handoffs successfully completed : 16

Failed Handoffs : 586

Calls dropped : 2170

Calls blocked because of lack of channels : 203

Calls blocked because of signal strength : 70

**After 3 hour**

**For Base station 1**

Channels in use : 21

Number of calls attempted : 4322

Number of successful connections : 4221

Number of successful calls : 1292

Handoffs attempted : 1065

Handoffs successfully completed : 25

Failed Handoffs : 1007

Calls dropped : 2984

Calls blocked because of lack of channels : 132

Calls blocked because of signal strength : 122

**For Base station 2**

Channels in use : 21

Number of calls attempted : 4465

Number of successful connections : 4264

Number of successful calls : 1216

Handoffs attempted : 940

Handoffs successfully completed : 21

Failed Handoffs : 876

Calls dropped : 3189

Calls blocked because of lack of channels : 271

Calls blocked because of signal strength : 101

**End of simulation summary report**

**For Base station 1**

Channels in use : 28

Number of calls attempted : 5716

Number of successful connections : 5558

Number of successful calls : 1672

Handoffs attempted : 1409

Handoffs successfully completed : 33

Failed Handoffs : 1324

Calls dropped : 3977

Calls blocked because of lack of channels : 203

Calls blocked because of signal strength : 152

**For Base station 2**

Channels in use : 24

Number of calls attempted : 5900

Number of successful connections : 5666

Number of successful calls : 1612

Handoffs attempted : 1227

Handoffs successfully completed : 27

Failed Handoffs : 1156

Calls dropped : 4224

Calls blocked because of lack of channels : 315

Calls blocked because of signal strength : 134

**4th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 28

Number of calls attempted : 1535

Number of successful connections : 1489

Number of successful calls : 418

Handoffs attempted : 329

Handoffs successfully completed : 9

Failed Handoffs : 296

Calls dropped : 1083

Calls blocked because of lack of channels : 59

Calls blocked because of signal strength : 29

**For Base station 2**

Channels in use : 29

Number of calls attempted : 1433

Number of successful connections : 1386

Number of successful calls : 378

Handoffs attempted : 349

Handoffs successfully completed : 9

Failed Handoffs : 314

Calls dropped : 1019

Calls blocked because of lack of channels : 55

Calls blocked because of signal strength : 37

**After 2 hour**

**For Base station 1**

Channels in use : 18

Number of calls attempted : 2996

Number of successful connections : 2926

Number of successful calls : 843

Handoffs attempted : 673

Handoffs successfully completed : 13

Failed Handoffs : 623

Calls dropped : 2126

Calls blocked because of lack of channels : 90

Calls blocked because of signal strength : 70

**For Base station 2**

Channels in use : 24

Number of calls attempted : 2896

Number of successful connections : 2820

Number of successful calls : 804

Handoffs attempted : 716

Handoffs successfully completed : 17

Failed Handoffs : 674

Calls dropped : 2048

Calls blocked because of lack of channels : 95

Calls blocked because of signal strength : 69

**After 3 hour**

**For Base station 1**

Channels in use : 21

Number of calls attempted : 4480

Number of successful connections : 4364

Number of successful calls : 1275

Handoffs attempted : 1003

Handoffs successfully completed : 19

Failed Handoffs : 960

Calls dropped : 3172

Calls blocked because of lack of channels : 153

Calls blocked because of signal strength : 101

**For Base station 2**

Channels in use : 26

Number of calls attempted : 4294

Number of successful connections : 4185

Number of successful calls : 1212

Handoffs attempted : 1091

Handoffs successfully completed : 26

Failed Handoffs : 1014

Calls dropped : 3032

Calls blocked because of lack of channels : 129

Calls blocked because of signal strength : 102

**End of simulation summary report**

**For Base station 1**

Channels in use : 25

Number of calls attempted : 5969

Number of successful connections : 5812

Number of successful calls : 1698

Handoffs attempted : 1310

Handoffs successfully completed : 25

Failed Handoffs : 1238

Calls dropped : 4232

Calls blocked because of lack of channels : 203

Calls blocked because of signal strength : 132

**For Base station 2**

Channels in use : 27

Number of calls attempted : 5727

Number of successful connections : 5590

Number of successful calls : 1630

Handoffs attempted : 1432

Handoffs successfully completed : 37

Failed Handoffs : 1357

Calls dropped : 4036

Calls blocked because of lack of channels : 160

Calls blocked because of signal strength : 137

**5th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 12

Number of calls attempted : 1364

Number of successful connections : 1348

Number of successful calls : 370

Handoffs attempted : 355

Handoffs successfully completed : 7

Failed Handoffs : 324

Calls dropped : 980

Calls blocked because of lack of channels : 22

Calls blocked because of signal strength : 28

**For Base station 2**

Channels in use : 26

Number of calls attempted : 1496

Number of successful connections : 1445

Number of successful calls : 429

Handoffs attempted : 395

Handoffs successfully completed : 8

Failed Handoffs : 368

Calls dropped : 1033

Calls blocked because of lack of channels : 74

Calls blocked because of signal strength : 32

**After 2 hour**

**For Base station 1**

Channels in use : 26

Number of calls attempted : 2820

Number of successful connections : 2745

Number of successful calls : 754

Handoffs attempted : 723

Handoffs successfully completed : 14

Failed Handoffs : 698

Calls dropped : 2025

Calls blocked because of lack of channels : 96

Calls blocked because of signal strength : 62

**For Base station 2**

Channels in use : 24

Number of calls attempted : 3014

Number of successful connections : 2905

Number of successful calls : 862

Handoffs attempted : 778

Handoffs successfully completed : 20

Failed Handoffs : 725

Calls dropped : 2107

Calls blocked because of lack of channels : 151

Calls blocked because of signal strength : 72

**After 3 hour**

**For Base station 1**

Channels in use : 30

Number of calls attempted : 4297

Number of successful connections : 4146

Number of successful calls : 1170

Handoffs attempted : 1088

Handoffs successfully completed : 25

Failed Handoffs : 1014

Calls dropped : 3066

Calls blocked because of lack of channels : 193

Calls blocked because of signal strength : 86

**For Base station 2**

Channels in use : 25

Number of calls attempted : 4448

Number of successful connections : 4307

Number of successful calls : 1274

Handoffs attempted : 1143

Handoffs successfully completed : 33

Failed Handoffs : 1096

Calls dropped : 3121

Calls blocked because of lack of channels : 184

Calls blocked because of signal strength : 109

**End of simulation summary report**

**For Base station 1**

Channels in use : 20

Number of calls attempted : 5679

Number of successful connections : 5493

Number of successful calls : 1566

Handoffs attempted : 1439

Handoffs successfully completed : 43

Failed Handoffs : 1364

Calls dropped : 4047

Calls blocked because of lack of channels : 247

Calls blocked because of signal strength : 115

**For Base station 2**

Channels in use : 26

Number of calls attempted : 5911

Number of successful connections : 5716

Number of successful calls : 1685

Handoffs attempted : 1511

Handoffs successfully completed : 42

Failed Handoffs : 1433

Calls dropped : 4169

Calls blocked because of lack of channels : 259

Calls blocked because of signal strength : 140

**Sum of Results**

**For Base station 1**

Number of calls attempted : 29223

Number of successful connections : 28306

Number of successful calls : 8351

Handoffs attempted : 7106

Handoffs successfully completed : 167

Failed Handoffs : 6707

Calls dropped : 20600

Calls blocked because of lack of channels : 1167

Calls blocked because of signal strength : 655

Percent of call attempts that are dropped – 70.49% (GOS = 0.7)

Predominant reason for call blockage – Due to Capacity

**For Base station 2**

Number of calls attempted : 28973

Number of successful connections : 28108

Number of successful calls : 8239

Handoffs attempted : 6860

Handoffs successfully completed : 179

Failed Handoffs : 6528

Calls dropped : 20444

Calls blocked because of lack of channels : 1147

Calls blocked because of signal strength : 672

Percent of call attempts that are dropped – 70.56% (GOS = 0.7)

Predominant reason for call blockage – Due to Capacity

Summary – Call blocks due to capacity increase since number of users are 3 times that in Q1.

Percentage of call attempts that are dropped remain almost the same.

**Q3)** Simulation for 4 hours with 1000 users, speed = 300m/s. 5 runs.

**1st Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 3

Number of calls attempted : 503

Number of successful connections : 503

Number of successful calls : 39

Handoffs attempted : 214

Handoffs successfully completed : 4

Failed Handoffs : 206

Calls dropped : 461

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 17

**For Base station 2**

Channels in use : 2

Number of calls attempted : 489

Number of successful connections : 489

Number of successful calls : 36

Handoffs attempted : 202

Handoffs successfully completed : 2

Failed Handoffs : 195

Calls dropped : 453

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 7

**After 2 hour**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 1005

Number of successful connections : 1005

Number of successful calls : 76

Handoffs attempted : 406

Handoffs successfully completed : 4

Failed Handoffs : 384

Calls dropped : 931

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 26

**For Base station 2**

Channels in use : 1

Number of calls attempted : 969

Number of successful connections : 969

Number of successful calls : 66

Handoffs attempted : 391

Handoffs successfully completed : 6

Failed Handoffs : 371

Calls dropped : 900

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 22

**After 3 hour**

**For Base station 1**

Channels in use : 5

Number of calls attempted : 1508

Number of successful connections : 1508

Number of successful calls : 115

Handoffs attempted : 608

Handoffs successfully completed : 14

Failed Handoffs : 785

Calls dropped : 1388

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 36

**For Base station 2**

Channels in use : 5

Number of calls attempted : 1451

Number of successful connections : 1451

Number of successful calls : 101

Handoffs attempted : 583

Handoffs successfully completed : 13

Failed Handoffs : 554

Calls dropped : 1349

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 35

**End of simulation summary report**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 1994

Number of successful connections : 1994

Number of successful calls : 136

Handoffs attempted : 819

Handoffs successfully completed : 21

Failed Handoffs : 794

Calls dropped : 1851

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 46

**For Base station 2**

Channels in use : 1

Number of calls attempted : 1935

Number of successful connections : 1935

Number of successful calls : 138

Handoffs attempted : 770

Handoffs successfully completed : 14

Failed Handoffs : 726

Calls dropped : 1803

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 45

**2nd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 473

Number of successful connections : 473

Number of successful calls : 29

Handoffs attempted : 175

Handoffs successfully completed : 3

Failed Handoffs : 162

Calls dropped : 443

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 12

**For Base station 2**

Channels in use : 1

Number of calls attempted : 481

Number of successful connections : 481

Number of successful calls : 22

Handoffs attempted : 194

Handoffs successfully completed : 3

Failed Handoffs : 176

Calls dropped : 458

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 6

**After 2 hour**

**For Base station 1**

Channels in use : 2

Number of calls attempted : 941

Number of successful connections : 941

Number of successful calls : 61

Handoffs attempted : 357

Handoffs successfully completed : 4

Failed Handoffs : 326

Calls dropped : 879

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 19

**For Base station 2**

Channels in use : 2

Number of calls attempted : 948

Number of successful connections : 948

Number of successful calls : 47

Handoffs attempted : 371

Handoffs successfully completed : 5

Failed Handoffs : 346

Calls dropped : 899

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 11

**After 3 hour**

**For Base station 1**

Channels in use : 2

Number of calls attempted : 1425

Number of successful connections : 1425

Number of successful calls : 91

Handoffs attempted : 549

Handoffs successfully completed : 7

Failed Handoffs : 516

Calls dropped : 1333

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 30

**For Base station 2**

Channels in use : 1

Number of calls attempted : 1394

Number of successful connections : 1394

Number of successful calls : 73

Handoffs attempted : 550

Handoffs successfully completed : 8

Failed Handoffs : 510

Calls dropped : 1319

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 23

**End of simulation summary report**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 1917

Number of successful connections : 1917

Number of successful calls : 122

Handoffs attempted : 744

Handoffs successfully completed : 9

Failed Handoffs : 693

Calls dropped : 1797

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 47

**For Base station 2**

Channels in use : 2

Number of calls attempted : 1888

Number of successful connections : 1888

Number of successful calls : 105

Handoffs attempted : 738

Handoffs successfully completed : 12

Failed Handoffs : 684

Calls dropped : 1778

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 29

**3rd Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 434

Number of successful connections : 434

Number of successful calls : 28

Handoffs attempted : 177

Handoffs successfully completed : 8

Failed Handoffs : 145

Calls dropped : 401

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 10

**For Base station 2**

Channels in use : 1

Number of calls attempted : 506

Number of successful connections : 506

Number of successful calls : 44

Handoffs attempted : 217

Handoffs successfully completed : 3

Failed Handoffs : 189

Calls dropped : 466

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 9

**After 2 hour**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 907

Number of successful connections : 907

Number of successful calls : 53

Handoffs attempted : 360

Handoffs successfully completed : 14

Failed Handoffs : 339

Calls dropped : 844

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 24

**For Base station 2**

Channels in use : 1

Number of calls attempted : 994

Number of successful connections : 994

Number of successful calls : 95

Handoffs attempted : 420

Handoffs successfully completed : 5

Failed Handoffs : 393

Calls dropped : 908

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 20

**After 3 hour**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 1368

Number of successful connections : 1368

Number of successful calls : 92

Handoffs attempted : 541

Handoffs successfully completed : 16

Failed Handoffs : 502

Calls dropped : 1271

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 38

**For Base station 2**

Channels in use : 0

Number of calls attempted : 1497

Number of successful connections : 1497

Number of successful calls : 128

Handoffs attempted : 635

Handoffs successfully completed : 12

Failed Handoffs : 597

Calls dropped : 1373

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 28

**End of simulation summary report**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 1876

Number of successful connections : 1876

Number of successful calls : 126

Handoffs attempted : 749

Handoffs successfully completed : 21

Failed Handoffs : 711

Calls dropped : 1748

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 49

**For Base station 2**

Channels in use : 1

Number of calls attempted : 1970

Number of successful connections : 1970

Number of successful calls : 157

Handoffs attempted : 839

Handoffs successfully completed : 20

Failed Handoffs : 793

Calls dropped : 1813

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 35

**4th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 2

Number of calls attempted : 485

Number of successful connections : 485

Number of successful calls : 45

Handoffs attempted : 185

Handoffs successfully completed : 1

Failed Handoffs : 179

Calls dropped : 444

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 13

**For Base station 2**

Channels in use : 2

Number of calls attempted : 472

Number of successful connections : 472

Number of successful calls : 24

Handoffs attempted : 199

Handoffs successfully completed : 7

Failed Handoffs : 187

Calls dropped : 440

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 13

**After 2 hour**

**For Base station 1**

Channels in use : 3

Number of calls attempted : 903

Number of successful connections : 903

Number of successful calls : 81

Handoffs attempted : 385

Handoffs successfully completed : 7

Failed Handoffs : 362

Calls dropped : 830

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 24

**For Base station 2**

Channels in use : 3

Number of calls attempted : 932

Number of successful connections : 932

Number of successful calls : 55

Handoffs attempted : 395

Handoffs successfully completed : 17

Failed Handoffs : 371

Calls dropped : 864

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 31

**After 3 hour**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 1394

Number of successful connections : 1394

Number of successful calls : 124

Handoffs attempted : 583

Handoffs successfully completed : 12

Failed Handoffs : 556

Calls dropped : 1282

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 41

**For Base station 2**

Channels in use : 3

Number of calls attempted : 1388

Number of successful connections : 1388

Number of successful calls : 89

Handoffs attempted : 579

Handoffs successfully completed : 25

Failed Handoffs : 547

Calls dropped : 1284

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 48

**End of simulation summary report**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 1886

Number of successful connections : 1886

Number of successful calls : 155

Handoffs attempted : 774

Handoffs successfully completed : 20

Failed Handoffs : 725

Calls dropped : 1740

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 58

**For Base station 2**

Channels in use : 3

Number of calls attempted : 1870

Number of successful connections : 1870

Number of successful calls : 119

Handoffs attempted : 770

Handoffs successfully completed : 29

Failed Handoffs : 728

Calls dropped : 1739

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 60

**5th Run :-**

**After 1 hour**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 481

Number of successful connections : 481

Number of successful calls : 30

Handoffs attempted : 181

Handoffs successfully completed : 5

Failed Handoffs : 172

Calls dropped : 449

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 15

**For Base station 2**

Channels in use : 2

Number of calls attempted : 502

Number of successful connections : 502

Number of successful calls : 29

Handoffs attempted : 206

Handoffs successfully completed : 3

Failed Handoffs : 189

Calls dropped : 473

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 14

**After 2 hour**

**For Base station 1**

Channels in use : 0

Number of calls attempted : 925

Number of successful connections : 925

Number of successful calls : 57

Handoffs attempted : 377

Handoffs successfully completed : 13

Failed Handoffs : 354

Calls dropped : 863

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 36

**For Base station 2**

Channels in use : 0

Number of calls attempted : 1032

Number of successful connections : 1032

Number of successful calls : 77

Handoffs attempted : 433

Handoffs successfully completed : 8

Failed Handoffs : 402

Calls dropped : 960

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 22

**After 3 hour**

**For Base station 1**

Channels in use : 2

Number of calls attempted : 1409

Number of successful connections : 1409

Number of successful calls : 95

Handoffs attempted : 568

Handoffs successfully completed : 16

Failed Handoffs : 538

Calls dropped : 1306

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 50

**For Base station 2**

Channels in use : 1

Number of calls attempted : 1549

Number of successful connections : 1549

Number of successful calls : 119

Handoffs attempted : 619

Handoffs successfully completed : 10

Failed Handoffs : 579

Calls dropped : 1435

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 37

**End of simulation summary report**

**For Base station 1**

Channels in use : 1

Number of calls attempted : 1872

Number of successful connections : 1872

Number of successful calls : 129

Handoffs attempted : 766

Handoffs successfully completed : 22

Failed Handoffs : 723

Calls dropped : 1735

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 65

**For Base station 2**

Channels in use : 3

Number of calls attempted : 2026

Number of successful connections : 2026

Number of successful calls : 152

Handoffs attempted : 816

Handoffs successfully completed : 14

Failed Handoffs : 776

Calls dropped : 1879

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 50

**Sum of Results**

**For Base station 1**

Number of calls attempted : 9545

Number of successful connections :9545

Number of successful calls : 668

Handoffs attempted : 3852

Handoffs successfully completed : 93

Failed Handoffs : 3646

Calls dropped : 8871

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 265

Percent of call attempts that are dropped – 92.93% (GOS = 0.92)

Predominant reason for call blockage – Due to Signal Strength

**For Base station 2**

Number of calls attempted : 9689

Number of successful connections : 9689

Number of successful calls : 671

Handoffs attempted : 3933

Handoffs successfully completed : 89

Failed Handoffs : 3707

Calls dropped : 9012

Calls blocked because of lack of channels : 0

Calls blocked because of signal strength : 219

Percent of call attempts that are dropped – 93.01% (GOS = 0.93)

Predominant reason for call blockage – Due to Signal Strength

Summary – Number of successful calls decrease by almost 1/4th number. Failed Handoffs increase. And percentage of call attempts that are dropped also increase.