COMPSCI 753 Asg 3

Name: Haolin Feng

SID: 964150056

1.(a) see in asg3.py

(b)

time: 26696 ms

iteration: 62 rounds

[id, score]

[6116, 0.0006177867154815842]

[69055, 0.0006065543233976054]

[69056, 0.0006065543233976054]

[69057, 0.0006065543233976054]

[31563, 0.00038756780164943863]

[572672, 0.0003482264479290426]

[572673, 0.00030958996008457015]

[60232, 0.00027105054535807397]

[572674, 0.0002702807179711503]

[33676, 0.00025978830964025945]

2

iteration 1

new total score 0.8444022185360854

leaked score 0.15559778146391456

iteration 2

new total score 0.7608999318994587

leaked score 0.2391000681005413

iteration 3

new total score 0.7146973305613532

leaked score 0.2853026694386468

iteration 4

new total score 0.6796493425770457

leaked score 0.3203506574229543

iteration 5

new total score 0.6481644598152154

leaked score 0.3518355401847846

iteration 6

new total score 0.6204556111937416

leaked score 0.3795443888062584

iteration 7

new total score 0.5948706346847032

leaked score 0.40512936531529675

iteration 8

new total score 0.571727673245942

leaked score 0.428272326754058

iteration 9

new total score 0.5501579173632306

leaked score 0.4498420826367694

iteration 10

new total score 0.5303514946875202

leaked score 0.4696485053124798

iteration 11

new total score 0.5118148031107661

leaked score 0.4881851968892339

iteration 12

new total score 0.4946433655148745

leaked score 0.5053566344851255

iteration 13

new total score 0.47849785371651926

leaked score 0.5215021462834808

iteration 14

new total score 0.4634547714041738

leaked score 0.5365452285958262

iteration 15

new total score 0.4492597809856178

leaked score 0.5507402190143822

iteration 16

new total score 0.4359668816928689

leaked score 0.5640331183071311

iteration 17

new total score 0.4233925007040305

leaked score 0.5766074992959695

iteration 18

new total score 0.41156879260414786

leaked score 0.5884312073958522

iteration 19

new total score 0.4003553574909488

leaked score 0.5996446425090511

iteration 20

new total score 0.3897786542392824

leaked score 0.6102213457607176

iteration 21

new total score 0.37972567674111996

leaked score 0.6202743232588801

iteration 22

new total score 0.370214396411503

leaked score 0.629785603588497

iteration 23

new total score 0.3611585679801968

leaked score 0.6388414320198033

iteration 24

new total score 0.3525688705980858

leaked score 0.6474311294019142

iteration 25

new total score 0.34437481166568423

leaked score 0.6556251883343158

iteration 26

new total score 0.3365865307125842

leaked score 0.6634134692874158

iteration 27

new total score 0.32914535940075185

leaked score 0.6708546405992482

iteration 28

new total score 0.3220573148564407

leaked score 0.6779426851435593

iteration 29

new total score 0.31527663695688035

leaked score 0.6847233630431196

iteration 30

new total score 0.30880628975354907

leaked score 0.6911937102464509

iteration 31

new total score 0.30260727039767266

leaked score 0.6973927296023273

iteration 32

new total score 0.2966833285838999

leaked score 0.7033166714161001

iteration 33

new total score 0.29100112584370985

leaked score 0.7089988741562901

iteration 34

new total score 0.2855620212683554

leaked score 0.7144379787316446

iteration 35

new total score 0.2803399249990111

leaked score 0.7196600750009889

iteration 36

new total score 0.2753346848543363

leaked score 0.7246653151456637

iteration 37

new total score 0.27052330297708205

leaked score 0.729476697022918

iteration 38

new total score 0.2659067209982517

leaked score 0.7340932790017483

iteration 39

new total score 0.26146492120226317

leaked score 0.7385350787977368

iteration 40

new total score 0.25719725473890165

leaked score 0.7428027452610984

iteration 41

new total score 0.25308813154169985

leaked score 0.7469118684583002

iteration 42

new total score 0.24913609552962165

leaked score 0.7508639044703783

iteration 43

new total score 0.2453269991001773

leaked score 0.7546730008998227

iteration 44

new total score 0.24166043810617618

leaked score 0.7583395618938238

iteration 45

new total score 0.23812394291351144

leaked score 0.7618760570864885

iteration 46

new total score 0.2347159945641109

leaked score 0.7652840054358891

iteration 47

new total score 0.23142701759497006

leaked score 0.7685729824050299

iteration 48

new total score 0.22825503246740997

leaked score 0.77174496753259

iteration 49

new total score 0.2251910963284945

leaked score 0.7748089036715056

iteration 50

new total score 0.22223415531996554

leaked score 0.7777658446800344

iteration 51

new total score 0.21937626185348988

leaked score 0.7806237381465101

iteration 52

new total score 0.2166155363119816

leaked score 0.7833844636880184

iteration 53

new total score 0.21394601331489324

leaked score 0.7860539866851067

iteration 54

new total score 0.21136555384084202

leaked score 0.788634446159158

iteration 55

new total score 0.20886842698273497

leaked score 0.791131573017265

iteration 56

new total score 0.20645327752458364

leaked score 0.7935467224754164

iteration 57

new total score 0.20411498530950023

leaked score 0.7958850146904998

iteration 58

new total score 0.20185156358048623

leaked score 0.7981484364195137

iteration 59

new total score 0.1996593007593222

leaked score 0.8003406992406779

iteration 60

new total score 0.19753606309333885

leaked score 0.8024639369066612

iteration 61

new total score 0.19547816877796348

leaked score 0.8045218312220366

iteration 62

new total score 0.19348414314523069

leaked score 0.8065158568547693

There is leaking in each iteration, the leaked score is decreasing. The remaining total rank score is tending to 0. There must be some dead ends in the graph.

3(a) see in asg3.py

(b)

time: 5779 ms

iteration: 11 rounds

[2138, 0.0010085161582659675]

[115, 0.0009705537443269537]

[3178, 0.00093805575507254]

[2560, 0.0009314724701095651]

[1950, 0.0008509553126823801]

[1181, 0.0008113770426200815]

[903, 0.0007834380557669587]

[1611, 0.0007573727679369888]

[3150, 0.0007537883564044839]

[3180, 0.0007401293020020773]

(c)

beta = 1.0

iteration: 90

beta = 0.9

iteration: 11

beta = 0.8

iteration: 7

beta = 0.7

iteration: 6

beta = 0.6

iteration: 5

beta = 0.5

iteration: 4

When decreasing the value of beta, the number of iteration leads to converge decrease faster.