

Our Solution(s)

Run Code

Solution 1Solution 2Solution 3

1

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2

3

O(n) time | O(n) space

4

def getNthFib(n, memoize={1: 0, 2: 1}):

5

if n in memoize:

6

return memoize[n]

7

else:

8

memoize[n] = getNthFib(n - 1, memoize) + getNthFib(n - 2,

9

return memoize[n]

10

Our Tests

1

def test_getNthFib():

2

assert getNthFib(1) == 0

3

assert getNthFib(2) == 1

4

assert getNthFib(3) == 1

5

assert getNthFib(4) == 2

6

assert getNthFib(5) == 3

7

assert getNthFib(6) == 5

8

assert getNthFib(7) == 8

9

assert getNthFib(8) == 13

10

assert getNthFib(9) == 21

11

assert getNthFib(10) == 34

12

assert getNthFib(11) == 55

13

assert getNthFib(12) == 89

14

assert getNthFib(13) == 144

15

assert getNthFib(14) == 233

16

assert getNthFib(15) == 377

17

assert getNthFib(16) == 610

18

assert getNthFib(17) == 987

19

assert getNthFib(18) == 1597

20

assert getNthFib(19) == 2584

21

assert getNthFib(20) == 4181

22

assert getNthFib(21) == 6765

23

assert getNthFib(22) == 10946

24

assert getNthFib(23) == 17711

25

assert getNthFib(24) == 28657

26

assert getNthFib(25) == 46368

27

assert getNthFib(26) == 75025

28

assert getNthFib(27) == 121393

29

assert getNthFib(28) == 196418

30

assert getNthFib(29) == 317811

31

assert getNthFib(30) == 514229

32

assert getNthFib(31) == 832040

33

assert getNthFib(32) == 1346269

34

assert getNthFib(33) == 2178309

35

assert getNthFib(34) == 3524558

36

assert getNthFib(35) == 5699057

37

assert getNthFib(36) == 9227465

38

assert getNthFib(37) == 14700653

39

assert getNthFib(38) == 23827618

40

assert getNthFib(39) == 38547035

41

assert getNthFib(40) == 62374653

42

assert getNthFib(41) == 100861943

43

assert getNthFib(42) == 163139060

44

assert getNthFib(43) == 263905079

45

assert getNthFib(44) == 427044139

46

assert getNthFib(45) == 691149168

47

assert getNthFib(46) == 1118195307

48

assert getNthFib(47) == 1809040075

49

assert getNthFib(48) == 2927735382

50

assert getNthFib(49) == 4736785457

51

assert getNthFib(50) == 7664550839

52

assert getNthFib(51) == 12401326296

53

assert getNthFib(52) == 20065877135

54

assert getNthFib(53) == 32477193431

55

assert getNthFib(54) == 52543070566

56

assert getNthFib(55) == 85020263997

57

assert getNthFib(56) == 137563234563

58

assert getNthFib(57) == 222583498560

59

assert getNthFib(58) == 360146733123

60

assert getNthFib(59) == 582730231683

61

assert getNthFib(60) == 942875964806

62

assert getNthFib(61) == 1525606196489

63

assert getNthFib(62) == 2468482161295

64

assert getNthFib(63) == 3994088357784

65

assert getNthFib(64) == 6462569519079

66

assert getNthFib(65) == 10456657876863

67

assert getNthFib(66) == 16919227395942

68

assert getNthFib(67) == 27375885272805

69

assert getNthFib(68) == 44295112668747

70

assert getNthFib(69) == 71670997941552

71

assert getNthFib(70) == 115966110609299

72

assert getNthFib(71) == 187636108550851

73

assert getNthFib(72) == 303596219150150

74

assert getNthFib(73) == 491232327701001

75

assert getNthFib(74) == 794828546851151

76

assert getNthFib(75) == 1286060874552152

77

assert getNthFib(76) == 2080889421403303

78

assert getNthFib(77) == 3366950295955455

79

assert getNthFib(78) == 5447839717358758

80

assert getNthFib(79) == 8814789913314213

81

assert getNthFib(80) == 14262629630672971

82

assert getNthFib(81) == 23077419544087184

83

assert getNthFib(82) == 37339049174759155

84

assert getNthFib(83) == 60416468718846339

85

assert getNthFib(84) == 97755517893605494

86

assert getNthFib(85) == 158171986612451833

87

assert getNthFib(86) == 255927504506057327

88

assert getNthFib(87) == 414109491118459160

89

assert getNthFib(88) == 670036995624516487

90

assert getNthFib(89) == 1084146486742975647

91

assert getNthFib(90) == 1754183482367492134

92

assert getNthFib(91) == 2838330469110467781

93

assert getNthFib(92) == 4592513951477959915

94

assert getNthFib(93) == 7430844420588427696

95

assert getNthFib(94) == 12023358372066387611

96

assert getNthFib(95) == 19454192792654815307

97

assert getNthFib(96) == 31477541164721192918

98

assert getNthFib(97) == 50931733957376008225

99

assert getNthFib(98) == 82409275122097191143

100

assert getNthFib(99) == 133340909079473199368

101

assert getNthFib(100) == 215750184201570390511

102

assert getNthFib(101) == 349091093270943589879

103

assert getNthFib(102) == 564841277472513980390

104

assert getNthFib(103) == 913932370743457570269

105

assert getNthFib(104) == 1478773648215971550659

106

assert getNthFib(105) == 2392705918959429121028

107

assert getNthFib(106) == 3871479567175400671687

108

assert getNthFib(107) == 6264185486134829792715

109

assert getNthFib(108) == 10135665053310230464402

110

assert getNthFib(109) == 16400850539445060257117

111

assert getNthFib(110) == 26536515592755290721519

112

assert getNthFib(111) == 42937366132190350978636

113

assert getNthFib(112) == 69473881724945641700155

114

assert getNthFib(113) == 112411247857135992678791

115

assert getNthFib(114) == 181885129582081634378946

116

assert getNthFib(115) == 294296377439217627057737

117

assert getNthFib(116) == 476181507021299261436683

118

assert getNthFib(117) == 770477884460516888494420

119

assert getNthFib(118) == 1246659391481816150131103

120

assert getNthFib(119) == 2017137275942332938625523

121

assert getNthFib(120) == 3263796667424149088756626

122

assert getNthFib(121) == 5280933943366481027382149

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assert getNthFib(122) == 8544730610790630116138775

124

assert getNthFib(123) == 13825664554157111143520924

125

assert getNthFib(124) == 22370395164947741259659699

126

assert getNthFib(125) == 36196059719104852383180623

127

assert getNthFib(126) == 58566454883052593642840322

128

assert getNthFib(127) == 94762514592157446025920945

129

assert getNthFib(128) == 153328969475210039668761267

130

assert getNthFib(129) == 248091484067367485694682212

131

assert getNthFib(130) == 401410453542577525363443479

132

assert getNthFib(131) == 649801937609944911058125691

133

assert getNthFib(132) == 1051212391152522436421569170

134

assert getNthFib(133) == 1700014328752467347479694861

135

assert getNthFib(134) == 2751226719905089783901264031

136

assert getNthFib(135) == 4451241048657557131380958892

137

assert getNthFib(136) == 7202467768562646915282222923

138

assert getNthFib(137) == 11653708817220204046663181815

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assert getNthFib(138) == 18856176585782850961945404738

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assert getNthFib(139) == 30509885403003054008608586553

141

assert getNthFib(140) == 49366061988785904970553991291

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assert getNthFib(141) == 79875947391788958979162577844

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assert getNthFib(142) == 129242009380574863949716569135

144

assert getNthFib(143) == 209117956772363822928879146979

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assert getNthFib(144) == 338360066152938686878595716114

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assert getNthFib(145) == 547478022925302509807474862093

147

assert getNthFib(146) == 885838089078241196686070578207

148

assert getNthFib(147) == 1433316111903543706493545440300

149

assert getNthFib(148) == 2319154190981784903179616018507

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assert getNthFib(149) == 3752470302885328609673161458807

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assert getNthFib(150) == 6071624493867113512852777477314

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assert getNthFib(151) == 9824094806752442122525938936121

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assert getNthFib(152) == 15895719290619555635378716403435

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assert getNthFib(153) == 25719814097371997757904654349550

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assert getNthFib(154) == 41615533388091553393283370752985

156

assert getNthFib(155) == 67335347485463551151188025102530

157

assert getNthFib(156) == 108950880873555104544471395855515

158

assert getNthFib(157) == 176286228359018655695659420958040

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assert getNthFib(158) == 285237109232573759840130816813555

160

assert getNthFib(159) == 461523337591592375535780237771595

161

assert getNthFib(160) == 746760446824166135375911054585150

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assert getNthFib(161) == 1208283784415758510911691292356745

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assert getNthFib(162) == 1955044231240924646287602346941890

164

assert getNthFib(163) == 3163327915656683157199293639298635

165

assert getNthFib(164) == 5118372146897607803486896086240520

166

assert getNthFib(165) == 8281699062554290960686189725539155

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assert getNthFib(166) == 13399071209451898764173085811779670

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assert getNthFib(167) == 21680770272006189724859275537318825

169

assert getNthFib(168) == 35079841481458088489032361349098490

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assert getNthFib(169) == 56760611753464278213891636886417315

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assert getNthFib(170) == 91840453234922366692924008235515800

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assert getNthFib(171) == 148599064988386644906815645121933115

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assert getNthFib(172) == 240439518223309011599739653357448910

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assert getNthFib(173) == 388938583211695656506555298479382025

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assert getNthFib(174) == 629378101435004668096294951836830930

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assert getNthFib(175) == 1018316684646690324602850250316212945

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assert getNthFib(176) == 1647694786081694992699145202153043860

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assert getNthFib(177) == 2666011470728385317301995452469256805

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assert getNthFib(178) == 4313706256810080310001140654622300660

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assert getNthFib(179) == 7079717727538465627303136107091557465

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assert getNthFib(180) == 11393423984348545937304276761713858120

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assert getNthFib(181) == 18463141711886911554607412868805415585

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assert getNthFib(182) == 30856565696235457491911689630519273700

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assert getNthFib(183) == 50319707408122369046519102491324689285

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assert getNthFib(184) == 81176273004357826538430792121843963000

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assert getNthFib(185) == 131495980412480195584949894613168652285

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assert getNthFib(186) == 212672253416838022123380686735012615290

188

assert getNthFib(187) == 344168233829318217708330581348181267575

189

assert getNthFib(188) == 556840487246156239831711268083193882860

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assert getNthFib(189) == 901008721075474457539041849431375150435

191

assert getNthFib(190) == 1457849208321630697370753117514569033290

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assert getNthFib(191) == 2358857929397105154909794966945944183725

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assert getNthFib(192) == 3816707137718735852280548084460513217020

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assert getNthFib(193) == 6175564267115841007189343051406457390745

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assert getNthFib(194) == 10092271404834576859469891135867070607770

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assert getNthFib(195) == 16267835671950417866659234187273528008515

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assert getNthFib(196) == 26360107076784994726129125323140598616290

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assert getNthFib(197) == 42627942748735412592788359510414126624805

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assert getNthFib(198) == 69088050825520407318917484833554725241100

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assert getNthFib(199) == 111715993574255820911605844343968851865305

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assert getNthFib(200) == 180804044399776228230523329177523577106410

202

assert getNthFib(201) == 292519037974032049142129173521492428971715

203

assert getNthFib(202) == 473323082373808277372652502698916006078120

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assert getNthFib(203) == 765842119347840326514771676220408434949835

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assert getNthFib(204) == 123916520172164860388742417891932444102790

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assert getNthFib(205) == 200400732106948893040219585513973287597775

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assert getNthFib(206) == 324317252279113753428962003405905731700580

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assert getNthFib(207) == 524617984386062646469181588919879019298335

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assert getNthFib(208) == 850935236665176399898143592325784751000140

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assert getNthFib(209) == 1375552221051239046367325181245663770298445

211

assert getNthFib(210) == 2226487457716415446265468773571448521398590

212

assert getNthFib(211) == 3602039678767654492632793954817112291697035

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assert getNthFib(212) == 5828527136484070938898262728388560813095580

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assert getNthFib(213) == 9430566815251725431531056683205673104793125

215

assert getNthFib(214) == 15259093951735796370429319411594233917888670

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assert getNthFib(215) == 24689660766987521801960376094799907022682215

217

assert getNthFib(216) == 40948754728723318172389752506394140940570860

218

assert getNthFib(217) == 66898409495710840074350128501193047963253075

219

assert getNthFib(218) == 109046964224434158246739881007587188903823930

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assert getNthFib(219) == 175845423720145008321089009508780336867077955

221

assert getNthFib(220) == 284892387944579166567828890516367525770901980

222

assert getNthFib(221) == 460737811664724174888917899025147862637979935

223

assert getNthFib(222) == 745630199609303341456746789541515388408881960

224

assert getNthFib(223) == 1206367011274027516345664688566663251046861915

225

assert getNthFib(224) == 1951997210883330857802411478108178639455743870

226

assert getNthFib(225) == 3158364222157358374148076166674841890502605825

227

assert getNthFib(226) == 5110361432040789231950487644783020529958349640

228

assert getNthFib(227) == 8268722654198147606098563811457862420460955095

229

assert getNthFib(228) == 13379084086445936837049051456240882950419304740

230

assert getNthFib(229) == 21647806740644084443147615267698745370879654385

231

assert getNthFib(230) == 35026890827089021280196666723939628321299004130

232

assert getNthFib(231) == 56674697567733105723344281991638373692178658265

233

assert getNthFib(232) == 91701588394812126903540948715577002013477312400

234

assert getNthFib(233) == 148376285962545232626885230707215375705655966535

235

assert getNthFib(234) == 239677874357357359530426179422792377719133283070

236

assert getNthFib(235) == 388054160320002592157311410130007753424789249605

237

assert getNthFib(236