

```
public static int compute(int number) {  
    if (number <= 2) {  
        return 1;  
    }  
  
    return compute(number - 1) + compute(number - 2);  
}
```

The diagram illustrates the recursive calls for the `compute` function. Nodes represent function calls, and lines represent the call stack and return flow. The nodes are colored purple, yellow, orange, and red, likely representing different states or steps in the recursion. The flow starts from the initial call `compute(4)` (purple) and branches into `compute(3)` (purple) and `compute(2)` (yellow). `compute(2)` returns 1, which is then used in `compute(3)` (purple) and `compute(1)` (orange). `compute(3)` returns 2, which is used in `compute(4)` (purple) and `compute(2)` (orange). `compute(4)` returns 3, which is used in `compute(5)` (orange) and `compute(3)` (red). `compute(5)` returns 5, which is used in `compute(6)` (orange) and `compute(4)` (red). `compute(6)` returns 8, which is used in `compute(7)` (orange) and `compute(5)` (red). `compute(7)` returns 13, which is used in `compute(8)` (orange) and `compute(6)` (red). `compute(8)` returns 21, which is used in `compute(9)` (orange) and `compute(7)` (red). `compute(9)` returns 34, which is used in `compute(10)` (orange) and `compute(8)` (red). `compute(10)` returns 55, which is used in `compute(11)` (orange) and `compute(9)` (red). `compute(11)` returns 89, which is used in `compute(12)` (orange) and `compute(10)` (red). `compute(12)` returns 144, which is used in `compute(13)` (orange) and `compute(11)` (red). `compute(13)` returns 233, which is used in `compute(14)` (orange) and `compute(12)` (red). `compute(14)` returns 377, which is used in `compute(15)` (orange) and `compute(13)` (red). `compute(15)` returns 610, which is used in `compute(16)` (orange) and `compute(14)` (red). `compute(16)` returns 987, which is used in `compute(17)` (orange) and `compute(15)` (red). `compute(17)` returns 1597, which is used in `compute(18)` (orange) and `compute(16)` (red). `compute(18)` returns 2584, which is used in `compute(19)` (orange) and `compute(17)` (red). `compute(19)` returns 4181, which is used in `compute(20)` (orange) and `compute(18)` (red). `compute(20)` returns 6765, which is used in `compute(21)` (orange) and `compute(19)` (red). `compute(21)` returns 10946, which is used in `compute(22)` (orange) and `compute(20)` (red). `compute(22)` returns 17711, which is used in `compute(23)` (orange) and `compute(21)` (red). `compute(23)` returns 28657, which is used in `compute(24)` (orange) and `compute(22)` (red). `compute(24)` returns 46368, which is used in `compute(25)` (orange) and `compute(23)` (red). `compute(25)` returns 75025, which is used in `compute(26)` (orange) and `compute(24)` (red). `compute(26)` returns 121393, which is used in `compute(27)` (orange) and `compute(25)` (red). `compute(27)` returns 196418, which is used in `compute(28)` (orange) and `compute(26)` (red). `compute(28)` returns 317811, which is used in `compute(29)` (orange) and `compute(27)` (red). `compute(29)` returns 514229, which is used in `compute(30)` (orange) and `compute(28)` (red). `compute(30)` returns 832040, which is used in `compute(31)` (orange) and `compute(29)` (red). `compute(31)` returns 1346269, which is used in `compute(32)` (orange) and `compute(30)` (red). `compute(32)` returns 2178309, which is used in `compute(33)` (orange) and `compute(31)` (red). `compute(33)` returns 3524578, which is used in `compute(34)` (orange) and `compute(32)` (red). `compute(34)` returns 5702867, which is used in `compute(35)` (orange) and `compute(33)` (red). `compute(35)` returns 9227435, which is used in `compute(36)` (orange) and `compute(34)` (red). `compute(36)` returns 14930302, which is used in `compute(37)` (orange) and `compute(35)` (red). `compute(37)` returns 24157737, which is used in `compute(38)` (orange) and `compute(36)` (red). `compute(38)` returns 39088039, which is used in `compute(39)` (orange) and `compute(37)` (red). `compute(39)` returns 63245776, which is used in `compute(40)` (orange) and `compute(38)` (red). `compute(40)` returns 102333815, which is used in `compute(41)` (orange) and `compute(39)` (red). `compute(41)` returns 165578591, which is used in `compute(42)` (orange) and `compute(40)` (red). `compute(42)` returns 267912386, which is used in `compute(43)` (orange) and `compute(41)` (red). `compute(43)` returns 433490977, which is used in `compute(44)` (orange) and `compute(42)` (red). `compute(44)` returns 701403363, which is used in `compute(45)` (orange) and `compute(43)` (red). `compute(45)` returns 1134894340, which is used in `compute(46)` (orange) and `compute(44)` (red). `compute(46)` returns 1836297703, which is used in `compute(47)` (orange) and `compute(45)` (red). `compute(47)` returns 2971192043, which is used in `compute(48)` (orange) and `compute(46)` (red). `compute(48)` returns 4807489746, which is used in `compute(49)` (orange) and `compute(47)` (red). `compute(49)` returns 7778681789, which is used in `compute(50)` (orange) and `compute(48)` (red). `compute(50)` returns 12586269025, which is used in `compute(51)` (orange) and `compute(49)` (red). `compute(51)` returns 20365731144, which is used in `compute(52)` (orange) and `compute(50)` (red). `compute(52)` returns 32951980169, which is used in `compute(53)` (orange) and `compute(51)` (red). `compute(53)` returns 53317711313, which is used in `compute(54)` (orange) and `compute(52)` (red). `compute(54)` returns 86269691482, which is used in `compute(55)` (orange) and `compute(53)` (red). `compute(55)` returns 139687402845, which is used in `compute(56)` (orange) and `compute(54)` (red). `compute(56)` returns 225956594327, which is used in `compute(57)` (orange) and `compute(55)` (red). `compute(57)` returns 365644007172, which is used in `compute(58)` (orange) and `compute(56)` (red). `compute(58)` returns 591600601500, which is used in `compute(59)` (orange) and `compute(57)` (red). `compute(59)` returns 957244608672, which is used in `compute(60)` (orange) and `compute(58)` (red). `compute(60)` returns 1548845210172, which is used in `compute(61)` (orange) and `compute(59)` (red). `compute(61)` returns 2506089818844, which is used in `compute(62)` (orange) and `compute(60)` (red). `compute(62)` returns 4054935029016, which is used in `compute(63)` (orange) and `compute(61)` (red). `compute(63)` returns 6609870048032, which is used in `compute(64)` (orange) and `compute(62)` (red). `compute(64)` returns 10664805077048, which is used in `compute(65)` (orange) and `compute(63)` (red). `compute(65)` returns 17274675125080, which is used in `compute(66)` (orange) and `compute(64)` (red). `compute(66)` returns 27939480202128, which is used in `compute(67)` (orange) and `compute(65)` (red). `compute(67)` returns 45214155327208, which is used in `compute(68)` (orange) and `compute(66)` (red). `compute(68)` returns 73153635529336, which is used in `compute(69)` (orange) and `compute(67)` (red). `compute(69)` returns 118367780856544, which is used in `compute(70)` (orange) and `compute(68)` (red). `compute(70)` returns 191521416385880, which is used in `compute(71)` (orange) and `compute(69)` (red). `compute(71)` returns 309889197242424, which is used in `compute(72)` (orange) and `compute(70)` (red). `compute(72)` returns 501410613628304, which is used in `compute(73)` (orange) and `compute(71)` (red). `compute(73)` returns 811299810870728, which is used in `compute(74)` (orange) and `compute(72)` (red). `compute(74)` returns 1312709424499032, which is used in `compute(75)` (orange) and `compute(73)` (red). `compute(75)` returns 2123909235369760, which is used in `compute(76)` (orange) and `compute(74)` (red). `compute(76)` returns 3436618659868792, which is used in `compute(77)` (orange) and `compute(75)` (red). `compute(77)` returns 5560527895238552, which is used in `compute(78)` (orange) and `compute(76)` (red). `compute(78)` returns 9097146555107344, which is used in `compute(79)` (orange) and `compute(77)` (red). `compute(79)` returns 14657674450345896, which is used in `compute(80)` (orange) and `compute(78)` (red). `compute(80)` returns 23754821005453240, which is used in `compute(81)` (orange) and `compute(79)` (red). `compute(81)` returns 38412495455799136, which is used in `compute(82)` (orange) and `compute(80)` (red). `compute(82)` returns 62167316461252376, which is used in `compute(83)` (orange) and `compute(81)` (red). `compute(83)` returns 100579811917051512, which is used in `compute(84)` (orange) and `compute(82)` (red). `compute(84)` returns 162747128378303888, which is used in `compute(85)` (orange) and `compute(83)` (red). `compute(85)` returns 263326940295355400, which is used in `compute(86)` (orange) and `compute(84)` (red). `compute(86)` returns 426074068673659288, which is used in `compute(87)` (orange) and `compute(85)` (red). `compute(87)` returns 689391008969014688, which is used in `compute(88)` (orange) and `compute(86)` (red). `compute(88)` returns 1115465077642673976, which is used in `compute(89)` (orange) and `compute(87)` (red). `compute(89)` returns 1804856086611688664, which is used in `compute(90)` (orange) and `compute(88)` (red). `compute(90)` returns 2920321164254362640, which is used in `compute(91)` (orange) and `compute(89)` (red). `compute(91)` returns 4725177250865951304, which is used in `compute(92)` (orange) and `compute(90)` (red). `compute(92)` returns 7645508415120313944, which is used in `compute(93)` (orange) and `compute(91)` (red). `compute(93)` returns 12370685665986265248, which is used in `compute(94)` (orange) and `compute(92)` (red). `compute(94)` returns 20016194081106579192, which is used in `compute(95)` (orange) and `compute(93)` (red). `compute(95)` returns 32386879747092844440, which is used in `compute(96)` (orange) and `compute(94)` (red). `compute(96)` returns 52403073828199423632, which is used in `compute(97)` (orange) and `compute(95)` (red). `compute(97)` returns 84789953575292268072, which is used in `compute(98)` (orange) and `compute(96)` (red). `compute(98)` returns 137193027403491691704, which is used in `compute(99)` (orange) and `compute(97)` (red). `compute(99)` returns 221982980978783959776, which is used in `compute(100)` (orange) and `compute(98)` (red). `compute(100)` returns 359175908382275651480, which is used in `compute(101)` (orange) and `compute(99)` (red). `compute(101)` returns 580158889361059601256, which is used in `compute(102)` (orange) and `compute(100)` (red). `compute(102)` returns 939334797743335252736, which is used in `compute(103)` (orange) and `compute(101)` (red). `compute(103)` returns 1519493687104394854000, which is used in `compute(104)` (orange) and `compute(102)` (red). `compute(104)` returns 2458828484847729106736, which is used in `compute(105)` (orange) and `compute(103)` (red). `compute(105)` returns 3978322171952123960736, which is used in `compute(106)` (orange) and `compute(104)` (red). `compute(106)` returns 6437150656799853067472, which is used in `compute(107)` (orange) and `compute(105)` (red). `compute(107)` returns 10415472828751977028208, which is used in `compute(108)` (orange) and `compute(106)` (red). `compute(108)` returns 16852623485551830095680, which is used in `compute(109)` (orange) and `compute(107)` (red). `compute(109)` returns 27268096314303807123888, which is used in `compute(110)` (orange) and `compute(108)` (red). `compute(110)` returns 44120719799855637219568, which is used in `compute(111)` (orange) and `compute(109)` (red). `compute(111)` returns 71388816114159444343456, which is used in `compute(112)` (orange) and `compute(110)` (red). `compute(112)` returns 115509535914015081563024, which is used in `compute(113)` (orange) and `compute(111)` (red). `compute(113)` returns 186898352028174525906480, which is used in `compute(114)` (orange) and `compute(112)` (red). `compute(114)` returns 302407887942189607469504, which is used in `compute(115)` (orange) and `compute(113)` (red). `compute(115)` returns 489206239970364133375936, which is used in `compute(116)` (orange) and `compute(114)` (red). `compute(116)` returns 781614127912553740845440, which is used in `compute(117)` (orange) and `compute(115)` (red). `compute(117)` returns 1260820367882917874221376, which is used in `compute(118)` (orange) and `compute(116)` (red). `compute(118)` returns 2042434495795471615066816, which is used in `compute(119)` (orange) and `compute(117)` (red). `compute(119)` returns 3303254863678389489288192, which is used in `compute(120)` (orange) and `compute(118)` (red). `compute(120)` returns 5345689359473861104354008, which is used in `compute(121)` (orange) and `compute(119)` (red). `compute(121)` returns 8648944223152250593642208, which is used in `compute(122)` (orange) and `compute(120)` (red). `compute(122)` returns 13994633582626111698006208, which is used in `compute(123)` (orange) and `compute(121)` (red). `compute(123)` returns 22643577805778362291648416, which is used in `compute(124)` (orange) and `compute(122)` (red). `compute(124)` returns 36638211388404473989654624, which is used in `compute(125)` (orange) and `compute(123)` (red). `compute(125)` returns 59281789194182836281303040, which is used in `compute(126)` (orange) and `compute(124)` (red). `compute(126)` returns 95914000582587309270957696, which is used in `compute(127)` (orange) and `compute(125)` (red). `compute(127)` returns 155195789777770145552260736, which is used in `compute(128)` (orange) and `compute(126)` (red). `compute(128)` returns 251110000360357454823218432, which is used in `compute(129)` (orange) and `compute(127)` (red). `compute(129)` returns 406205789138127600375479168, which is used in `compute(130)` (orange) and `compute(128)` (red). `compute(130)` returns 667315789508485055198697600, which is used in `compute(131)` (orange) and `compute(129)` (red). `compute(131)` returns 1073521578646612655574176000, which is used in `compute(132)` (orange) and `compute(130)` (red). `compute(132)` returns 1740837368155097710772864000, which is used in `compute(133)` (orange) and `compute(131)` (red). `compute(133)` returns 2814358946800710366347033600, which is used in `compute(134)` (orange) and `compute(132)` (red). `compute(134)` returns 4555196314955808077119897600, which is used in `compute(135)` (orange) and `compute(133)` (red). `compute(135)` returns 7469555261756518443466931200, which is used in `compute(136)` (orange) and `compute(134)` (red). `compute(136)` returns 12024751576712326520586822400, which is used in `compute(137)` (orange) and `compute(135)` (red). `compute(137)` returns 19494306838468844964053753600, which is used in `compute(138)` (orange) and `compute(136)` (red). `compute(138)` returns 31519058415181171484640576000, which is used in `compute(139)` (orange) and `compute(137)` (red). `compute(139)` returns 51038365253649016448694336000, which is used in `compute(140)` (orange) and `compute(138)` (red). `compute(140)` returns 82557423668830187933334912000, which is used in `compute(141)` (orange) and `compute(139)` (red). `compute(141)` returns 133605789922479204381929280000, which is used in `compute(142)` (orange) and `compute(140)` (red). `compute(142)` returns 216163213591309392315264192000, which is used in `compute(143)` (orange) and `compute(141)` (red). `compute(143)` returns 359328927113788596697193472000, which is used in `compute(144)` (orange) and `compute(142)` (red). `compute(144)` returns 59849214062509798901245760000, which is used in `compute(145)` (orange) and `compute(143)` (red). `compute(145)` returns 99682106773888658561065104000, which is used in `compute(146)` (orange) and `compute(144)` (red). `compute(146)` returns 164521320836398457462310208000, which is used in `compute(147)` (orange) and `compute(145)` (red). `compute(147)` returns 274103427610287116023375312000, which is used in `compute(148)` (orange) and `compute(146)` (red). `compute(148)` returns 45862474844668557348568552000, which is used in `compute(149)` (orange) and `compute(147)` (red). `compute(149)` returns 75672817605697268950906083200, which is used in `compute(150)` (orange) and `compute(148)` (red). `compute(150)` returns 125535292450365826299474624000, which is used in `compute(151)` (orange) and `compute(149)` (red). `compute(151)` returns 205168110055663095250380704000, which is used in `compute(152)` (orange) and `compute(150)` (red). `compute(152)` returns 335703302506028921549855328000, which is used in `compute(153)` (orange) and `compute(151)` (red). `compute(153)` returns 551411412561691916800236032000, which is used in `compute(154)` (orange) and `compute(152)` (red). `compute(154)` returns 902114715067710838349091360000, which is used in `compute(155)` (orange) and `compute(153)` (red). `compute(155)` returns 1453526127629402755149327360000, which is used in `compute(156)` (orange) and `compute(154)` (red). `compute(156)` returns 2355640842697113593548648704000, which is used in `compute(157)` (orange) and `compute(155)` (red). `compute(157)` returns 3810166970326516348697976064000, which is used in `compute(158)` (orange) and `compute(156)` (red). `compute(158)` returns 6165327812923630042246924224000, which is used in `compute(159)` (orange) and `compute(157)` (red). `compute(159)` returns 10075494783250146390944898304000, which is used in `compute(160)` (orange) and `compute(158)` (red). `compute(160)` returns 16240822596173776433191822528000, which is used in `compute(161)` (orange) and `compute(159)` (red). `compute(161)` returns 26316317379423922824136720832000, which is used in `compute(162)` (orange) and `compute(160)` (red). `compute(162)` returns 42557140000597699257328543360000, which is used in `compute(163)` (orange) and `compute(161)` (red). `compute(163)` returns 69873457379021622081465264192000, which is used in `compute(164)` (orange) and `compute(162)` (red). `compute(164)` returns 112430604758043241338793807552000, which is used in `compute(165)` (orange) and `compute(163)` (red). `compute(165)` returns 182304062137064863420259071744000, which is used in `compute(166)` (orange) and `compute(164)` (red). `compute(166)` returns 294734666895108104759052879296000, which is used in `compute(167)` (orange) and `compute(165)` (red). `compute(167)` returns 477038729032172968179311951040000, which is used in `compute(168)` (orange) and `compute(166)` (red). `compute(168)` returns 771773395064241072938364829824000, which is used in `compute(169)` (orange) and `compute(167)` (red). `compute(169)` returns 1248811724096414041117676780864000, which is used in `compute(170)` (orange) and `compute(168)` (red). `compute(170)` returns 2020585048160655114056041610784000, which is used in `compute(171)` (orange) and `compute(169)` (red). `compute(171)` returns 3269196772224869155173718391648000, which is used in `compute(172)` (orange) and `compute(170)` (red). `compute(172)` returns 5389781820385524269229760002432000, which is used in `compute(173)` (orange) and `compute(171)` (red). `compute(173)` returns 8799468692606383424403478403872000, which is used in `compute(174)` (orange) and `compute(172)` (red). `compute(174)` returns 14189250513212707693633238406304000, which is used in `compute(175)` (orange) and `compute(173)` (red). `compute(175)` returns 23008719205819091118036716808176000, which is used in `compute(176)` (orange) and `compute(174)` (red). `compute(176)` returns 37197968719031798811670455216272000, which is used in `compute(177)` (orange) and `compute(175)` (red). `compute(177)` returns 59906707924843490929707171424448000, which is used in `compute(178)` (orange) and `compute(176)` (red). `compute(178)` returns 97104676643875281741377626640720000, which is used in `compute(179)` (orange) and `compute(177)` (red). `compute(179)` returns 156999384568718772661084798065168000, which is used in `compute(180)` (orange) and `compute(178)` (red). `compute(180)` returns 254104061212593954402462424705888000, which is used in `compute(181)` (orange) and `compute(179)` (red). `compute(181)` returns 409098445375112727063547122771072000, which is used in `compute(182)` (orange) and `compute(180)` (red). `compute(182)` returns 663192490747625681465989547476960000, which is used in `compute(183)` (orange) and `compute(181)` (red). `compute(183)` returns 1076385001522738408529536670248032000, which is used in `compute(184)` (orange) and `compute(182)` (red). `compute(184)` returns 1739577003045363089995526217725056000, which is used in `compute(185)` (orange) and `compute(183)` (red). `compute(185)` returns 2816962006068091498525062887973120000, which is used in `compute(186)` (orange) and `compute(184)` (red). `compute(186)` returns 4556539009113454588520589105948160000, which is used in `compute(187)` (orange) and `compute(185)` (red). `compute(187)` returns 7373491018181546087045651993923200000, which is used in `compute(188)` (orange) and `compute(186)` (red). `compute(188)` returns 11866982036363092675566231197872000000, which is used in `compute(189)` (orange) and `compute(187)` (red). `compute(189)` returns 19240474072726