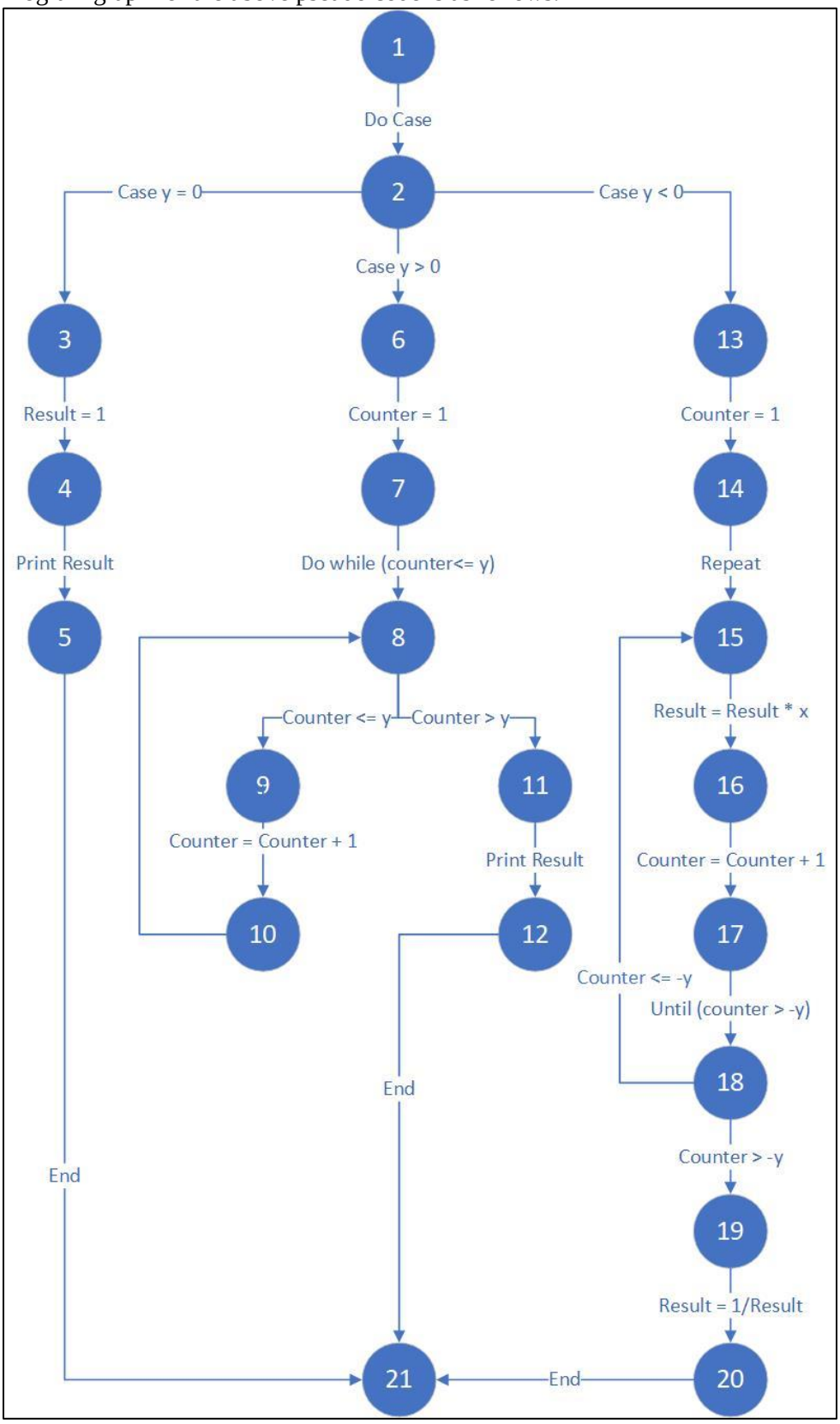
MIS 6308
Fall 2017
Assignment 4

1. Consider the following program. (10 points)

   Precondition: x is a non-negative integer and y is an integer.

```
(1)     Read x,y
(2)     Do case
(3)             Case y = 0
(4)                     {Result = 1
(5)                     Print Result}
(6)             Case y > 0
(7)                     {counter = 1
(8)                     Do while (counter <= y)
(9)                             Result = Result*x
(10)                            counter = counter + 1
(11)                    End Do
(12)                    Print Result}
(13)            Case y < 0
(14)                    {counter = 1
(15)                    Repeat
(16)                            Result = Result*x
(17)                            counter = counter + 1
(18)                    Until (counter > -y)
(19)                    Result = 1/Result
(20)                    Print Result}
(21)    End
```

a) Program graph for the above pseudo code is as follows:



b) Test data to test the above program using statement coverage are as follows:
    a. X = 1, Y = 0
    b. X = 1, Y = 2
    c. X = 1, Y = -2

c) Test data to test the above program using branch coverage are as follows:
    a. X = 1, Y = 0
    b. X = 1, Y = 2
    c. X = 1, Y = -2

d) Test data to test the above program using path coverage are as follows:
    a. X = 1, Y = 0
    b. X = 1, Y = 2
    c. X = 1, Y = -2

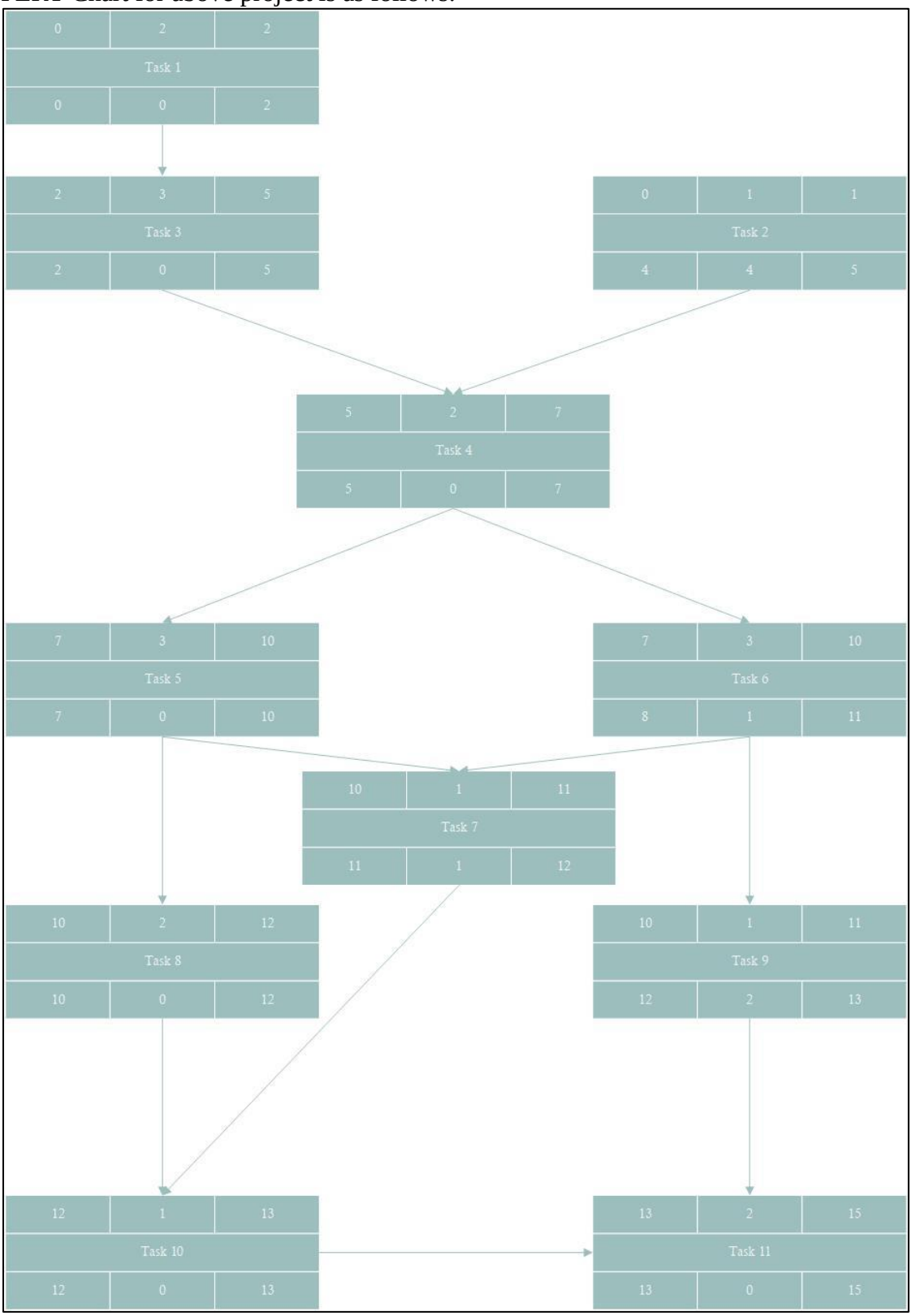
and infinitely many more like

    a. X = 1, Y = 1
    b. X = 1, Y = -1
    c. X = 1, Y = 3
    d. X = 1, Y = -3
    e. X = 1, Y = 4
    f. X = 1, Y = -4
    g. X = 1, Y = 4
    h. X = 1, Y = 5
    i. X = 1, Y = -5

2. Consider the following project.

Activity	Duration (weeks)	Precedence Relationship
1	2	-
2	1	-
3	3	1
4	2	2, 3
5	3	4
6	3	4
7	1	5, 6
8	2	5
9	1	6
10	1	7, 8
11	2	9, 10

a) PERT Chart for above project is as follows:



b) Slack for each activity is mentioned as below:
    a. Task 1: 0 weeks
    b. Task 2: 4 weeks
    c. Task 3: 0 weeks
    d. Task 4: 0 weeks
    e. Task 5: 0 weeks
    f. Task 6: 1 week
    g. Task 7: 1 week
    h. Task 8: 0 weeks
    i. Task 9: 2 weeks
    j. Task 10: 0 weeks
    k. Task 11: 0 weeks
c) Task 1, 3, 4, 5, 8, 10 and 11 are critical activities for this project.
d) 15 weeks at least are required to complete the project.