

LAB EXERCISE 1
TOPIC 1: PROGRAMMING PROBLEM SOLVING

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QUESTION 1

[5 Marks]

Based on the following pseudocode in **Figure 1**, complete the trace table given in **Table 1**.

```
1. START
2. READ n, m
3. IF (n >= m)
    3.1 START_IF
        3.1.1 IF (n > 10)
            3.1.1.1 START_IF
                3.1.1.1.1 IF (m > 10)
                    3.1.1.1.1.1 START_IF
                        3.1.1.1.1.1.1 PRINT "both n and m is greater than 10"
                    3.1.1.1.1.1.2 END_IF
                3.1.1.1.1.2 IF (n == m)
                    3.1.1.1.1.2.1 START_IF
                        3.1.1.1.1.2.1.1.1 PRINT "n is equal to m"
                    3.1.1.1.1.2.2 END_IF
            3.1.1.2 END_IF
        3.2 END_IF
4. ELSE
    4.1 PRINT (n-m)*2
5. PRINT n, m
6. END
```

Figure 1

ANSWER:**Table 1**

n	m	Output
0	0	0,0
10	0	10,0
20	10	20,10
20	20	both n and m is greater than 10 n is equal to m 20,20
0	10	- 20 0,10

QUESTION 2**[20 Marks]**

Write a pseudo code for a program that will implement the following decision table in **Table 2**. The program will print the input grade point and the class of degree based on a user input. The program will terminate the loop when a user input a sentinel value other than 'y' or 'Y'.

Table 2

GRADE POINT	Class of Degree
0.0 – 0.99	Failed
1.0 – 2.00	General degree
2.1 – 2.7	Second class lower
2.71 – 3.69	Second class upper
3.7 – 4.00	First Class

ANSWER:

1. Start
2. Read sentinel
3. while (sentinel == "y" || sentinel == "Y")
 - 3.1 Read Grade
 - 3.2 if(Grade>0.0 && Grade <=0.99)
 - 3.2.1 Degree = "Failed"
 - 3.3 else if(Grade>=1.00 && Grade<=2.00)
 - 3.3.1 Degree = "General degree"
 - 3.4 else if(Grade>=2.01 && Grade<=2.7)
 - 3.4.1 Degree = "Second class lower"
 - 3.5 else if(Grade>=2.71 && Grade<=3.79)
 - 3.5.1 Degree = "Second class lower"
 - 3.6 else if(Grade>=3.7 && Grade<=4.00)
 - 3.6.1 Degree = "First Class"
 - 3.7 end if
 - 3.8 Print Grade,Degree
 - 3.9 Read sentinel
4. End_while
5. End