School of Computing

UNIVERSITI TEKNOLOGI MALAYSIA

Lab Exercise 1

FATIN AIMI AYUNI

BINTI AFFINDY

A20EC0190

SEMESTER I

2020/2021

PART A – OUTPUT TRACING QUESTION

QUESTION 1

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

[5 marks]

```
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"
               3.1.1.1.1.2 END_IF
            3.1.1.1.2   IF (n = = m)
               3.1.1.1.2.1 START_IF
                     3.1.1.1.2.1.1.1 PRINT "n is equal to m"
               3.1.1.1.2.2 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

Based on the following pseudo code in **Figure 2**, complete the trace table given in **Table 2**.

[9 marks]

Data to be used for this problem is:

noItems

3

itemID	CP	SP	units
1111	32	40	10
2222	25	30	5
3333	57	65	2

```
1. START
2. SET Total to 0
3. READ noItems
4. WHILE (noItems IS NOT 0)
   4.1 START_WHILE
       4.1.1 READ itemID, CP, SP, units
       4.1.2 P = (SP * units) - (CP * units)
       4.1.3 ADD P to Total
       4.1.4 PRINT itemID, P
       4.1.5 SUBTRACT 1 from noItems
   4.2 END_WHILE
5. PRINT Total
6. END
```

Figure 2

ANSWER:

Table 2

Total	noItems	P	Output
0	3	80	1111 80
80	2	25	2222 25
105	1	16	3333 16
121			121

PART B – PROBLEM SOLVING QUESTION

QUESTION 1

[20 marks]

Write a pseudo code for a program that will implement the following decision table in **Table 5**. 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 5

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 INPUT
3. WHILE (INPUT = = ‘Y’ || INPUT = = ‘y’)
   3.1 START_WHILE
      3.1.1 READ GP
      3.1.2 IF ((GP >= 0.00) && (GP < 1.00))
         3.1.2.1 START_IF
            3.1.2.1.1 PRINT GP, “FAILED”
         3.1.2.2 END_IF
      3.1.3 ELSE IF (GP < 2.10)
         3.1.3.1 START_ELSE_IF
            3.1.3.1.1 PRINT GP, “GENERAL DEGREE”
         3.1.3.2 END_ELSE_IF
      3.1.4 ELSE IF (GP < 2.71)
         3.1.4.1 START_ELSE_IF
            3.1.4.1.1 PRINT GP, “SECOND CLASS LOWER”
         3.1.4.2 END_ELSE_IF
      3.1.5 ELSE IF (GP < 3.70)
         3.1.5.1 START_ELSE_IF
            3.1.5.1.1 PRINT GP, “SECOND CLASS UPPER”
         3.1.5.2 END_ELSE_IF
      3.1.6 ELSE IF (GP <= 4.00)
         3.1.6.1 START_ELSE_IF
            3.1.6.1.1 PRINT GP, “FIRST CLASS”
         3.2.6.2 END_ELSE_IF
      3.1.7 ELSE
         3.1.7.1 START_ELSE
            3.1.7.1.1 PRINT “ERROR! PLEASE TRY AGAIN!”
         3.1.7.2 END_ELSE
      3.1.8 READ INPUT
   3.2 END_WHILE
4. END