

# TEST 2 programing part

- **Question #1** Consider a 5-point quiz system. A score can be any number between 0 and 5. Using mathematical interval notation, the score is in the interval  $[0, 5]$ . The interval notation  $(4, 5]$  means that number 4 is not in the interval. Hence the numbers included in this interval are all real values  $x$  such that  $4 < x \leq 5$ .
- The score is graded according to the following scale:

Score	Grade
$(4, 5]$	A
$(3, 4]$	B
$(2, 3]$	C
$(1, 2]$	D
$[0, 1]$	F

- Write a program that reads a quiz score and then prints out the corresponding grade.
- Note that your program should
  1. Prompt the user of your program using an appropriate message.
  2. Check that the input is within range (from 0 to 5). If the wrong input is given, the program should ask the user for input again until he enters a valid input.
  3. Print an output message reading: "Your grade is " followed by the grade.
- The following are two sample runs of the program:
- **Sample Run 1:**  
Please enter score: -1  
Invalid score. Try again.  
Please enter score: 5.5  
Invalid score. Try again.  
Please enter score: 3.5  
Your grade is B
- **Sample Run 2:**  
Please enter score: 5  
Your grade is A

```
In [5]: 1 %%code q1
2 # YOUR CODE HERE
3
4 Input = float(input("Enter your score: "))
5 while Input < 0 or Input > 5:
6     print("Invalid score")
7     Input = float(input("Enter your score: "))
8
9
10 if Input >= 0 and Input <= 1:
11     grade = "F"
12
13 elif Input > 1 and Input <= 2:
14     grade = "D"
15
16 elif Input > 2 and Input <= 3:
17     grade = "C"
18
19 elif Input > 3 and Input <= 4:
20     grade = "B"
21
22 elif Input > 4 and Input <= 5:
23     grade = "A"
24
25
26 print("your grade is", grade)
27
```

- **Question #2** Write a program that prints a nicely formatted table of the **product** of every pair of numbers in a given set of integer numbers. Your program reads two integer numbers  $x$  and  $y$  that represent the lower and upper bounds of the set, ( $x \leq y$ ), respectively. Then, for every pair of numbers in this set  $\{x, x+1, x+2, \dots, y\}$ , your program should compute the product of the two numbers.
- Please note the following:
  1. Your program should read each input (lower bound and the upper bound) one at a time, and should make sure that each input is an integer. If not, it should prompt the user to re-enter a valid input.
  2. Once the two numbers are read, your program should validate that the lower bound is less than or equal to the upper bound. Otherwise, the input should be read again, starting from the lower bound.
- The following is a sample run of the program

```

Enter lower bound: a
Invalid input. Try again.

Enter lower bound: 2.a
Invalid input. Try again.

Enter lower bound: 4
Enter upper bound: cc
Invalid input. Try again.

Enter upper bound: 1
Lower bound cannot be greater than upper bound

Enter lower bound: a
Invalid input. Try again.

Enter lower bound: 1
Enter upper bound: 5

      1   2   3   4   5
      ---
1 : 1   2   3   4   5
2 : 2   4   6   8  10
3 : 3   6   9  12  15
4 : 4   8  12  16  20
5 : 5  10  15  20  25

```

```

In [25]: 1 %%code q2
          2 # YOUR CODE HERE
          3
          4 lower = input("Enter lower: ")
          5 while not (lower.isdigit()):
          6     print("Invalid input")
          7     lower = input("Enter lower: ")
          8 lower = int(lower)
          9
         10
         11 upper = input("Enter upper: ")
         12 while not (upper.isdigit()):
         13     print("Invalid input")
         14     upper = input("Enter upper: ")
         15 upper = int(upper)
         16
         17

```

```

16
17
18 while upper < lower:
19     print("LOWER NO GREATER ")
20     lower = input("Enter lower: ")
21     while not (lower.isdigit()):
22         print("Invalid input")
23         lower = input("Enter lower: ")
24     lower = int(lower)
25     upper = input("Enter upper: ")
26     while not (upper.isdigit()):
27         print("Invalid input")
28         upper = input("Enter upper: ")
29     upper = int(upper)
30
31
32
33 print(" ",end="")
34 for i in range(1,upper +1):
35     print("%5d" % i,end="")
36 print()
37 print(" ",end="")
38
39 print("-"*25)
40 for i in range(1,upper +1):
41     print("%-3d :"%i,end="")
42     for j in range(1,upper +1):
43         print("%-5d" %(i*j),end="")
44     print()

```

```

Enter lower: a
Invalid input
Enter lower: 2.1
Invalid input
Enter lower: 4
Enter upper: cc
Invalid input
Enter upper: 1
LOWER NO GREATER
Enter lower: a
Invalid input
Enter lower: 1
Enter upper: 5

```

		1	2	3	4	5
1	:1	2	3	4	5	
2	:2	4	6	8	10	
3	:3	6	9	12	15	
4	:4	8	12	16	20	
5	:5	10	15	20	25	