C5 – S1 – THEORY

EXERCISE 1

PROBLEM:

- ✓ Enter a number.
- ✓ Check if this number is in one of the bellow ranges:

  1 to 10
  29 to 51
  76 to 101

- ✓ Print True if the number is in one of the ranges, print False otherwise.

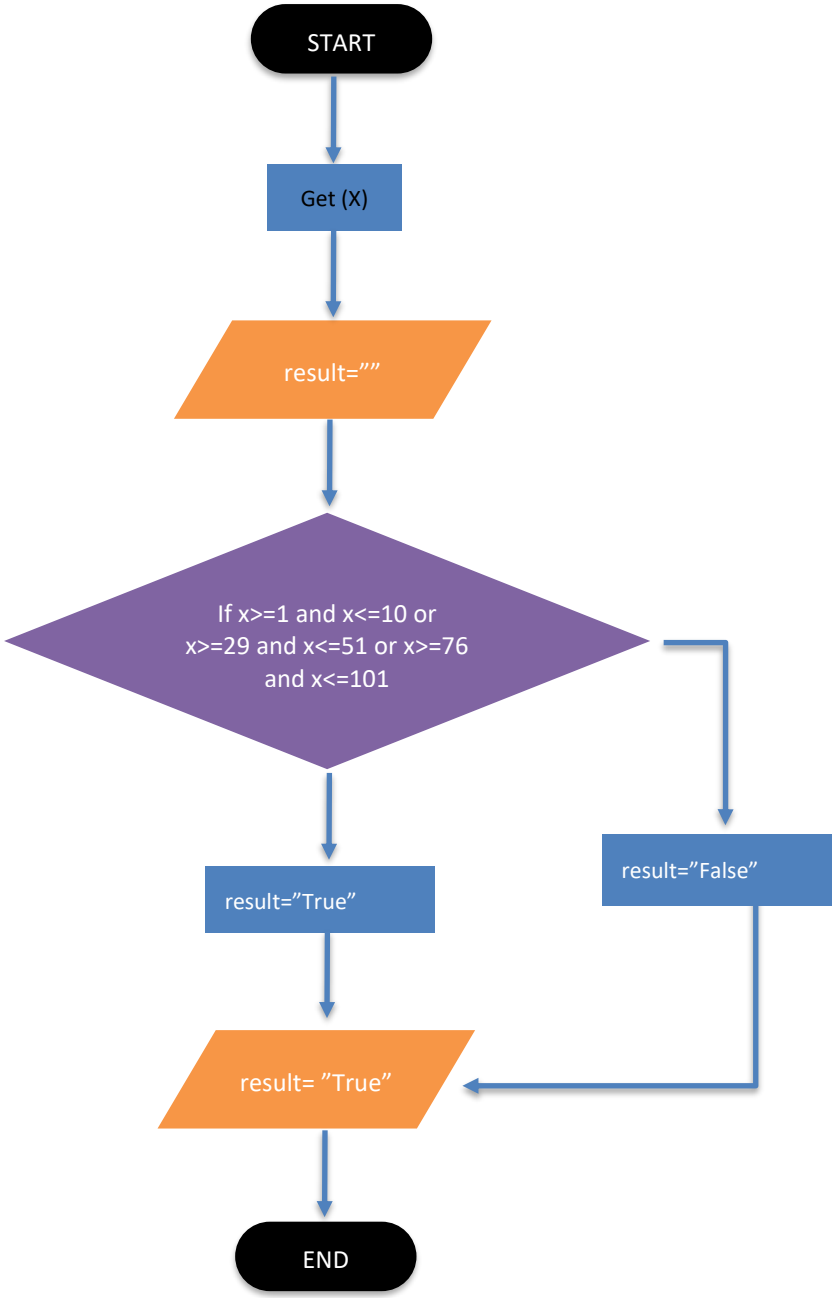
Q1 – Complete the missing outputs

INPUT	OUTPUT
11	False
50	True
88	True
30	True
101	True

Q2 – Analyze the symbols you need to solve this problem

Element	Do you need it?	For what?
Action 	Yes	To get the action
Decision 	Yes	
Repeat 		
Input / Output 	Yes	To check input and output

Q3 – Create a flowchart to solve this problem.



Q4 – **Execute** the flowchart: What is the result of your flowchart with those inputs?

INPUT	**OUTPUT**
-1	False
0	False
8	True
11	False
15	False
29	True

35	True
75	False
80	True
110	False

Q5 – Review the code and find **the error** and explain them.

```
# Check if a number is in one of the 3 ranges: 1 to 10  or 29 to 51 or 76 to 101
value = int(input())
inRange = False

if value >= 1 or value <= 10:
    inRange = True
elif value >= 29 or value <= 51:
    inRange = True
elif value >= 76 or value <= 101:
    inRange = True

print(inRange)
```

Q6 If this code is a valid code? Explain why

```
# Check if a number is in one of the 3 ranges: 1 to 10  or 29 to 51 or 76 to 101
value = int(input())
inRange = True

if value < 1:
    inRange = False
elif value > 10 and value < 29:
    inRange = False
elif value > 51 and value < 76:
    inRange = False
elif value > 101:
    inRange = False

print(inRange)
```

Q7– Write your own good code to solve this problem.
This time, you can us **1 condition** only

```
x=int(input())
result=""
if x>=1 and x<=10 or x>=29 and x<=51 or x>=76 and x<=101:
    result="True"
else:
    result="False"
print(result)
```

EXERCICE 2

- Input a text in the console.
- Print the number of points related to this word, following the below rules.

IF THE WORD CONTAINS	THEN THE POINTS ARE
One *'A'* or more	10 points
One *'B'* or more	20 points

- Note: you can cumulate the rules: if you have some "A" and some "B" it will be 10+20 = 30 points!
- If no rules match, then the result is 0 points.

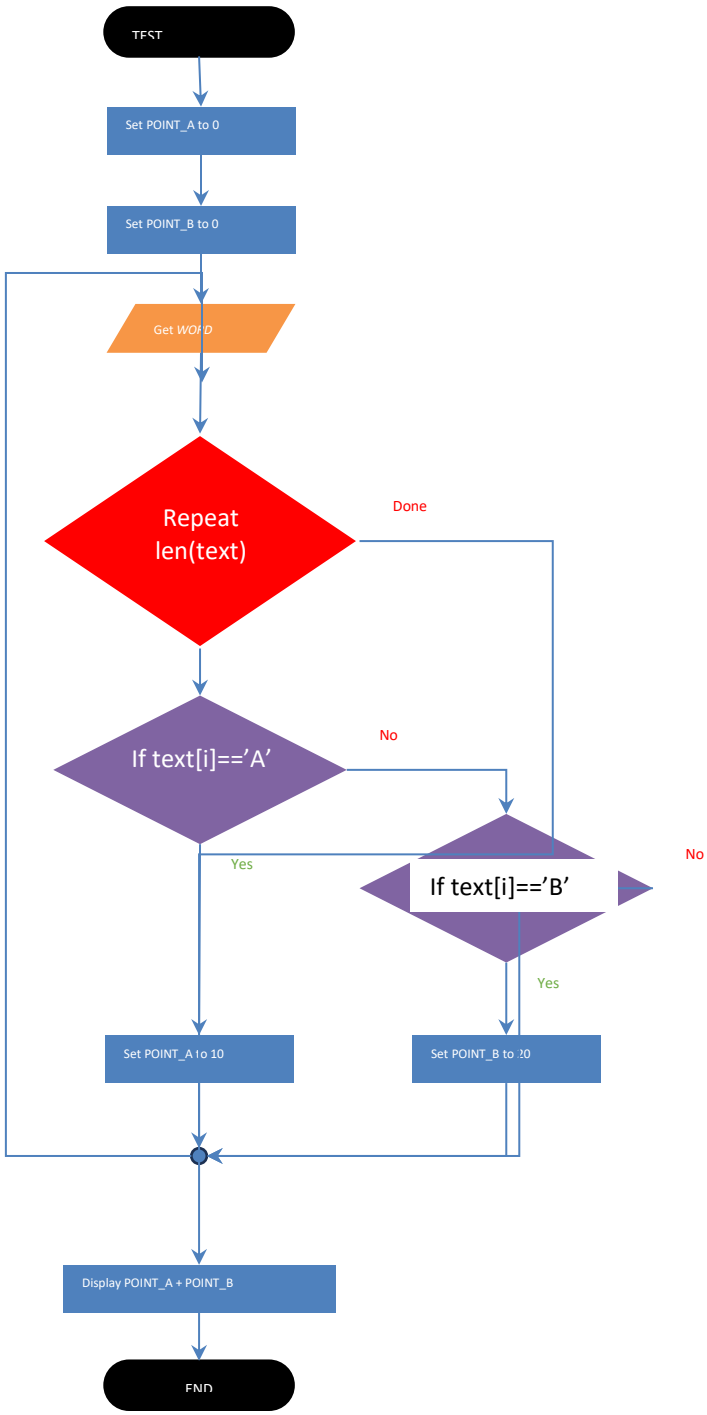
Examples

INPUT	OUTPUT
KKK	0
BCA	30 *Because we found 1 'B' and 1 'A': 10 + 20*
MMBBR	20
MAARTDAC	10
AABBBB	30
C	0

Q1 – What will be the **results** for those inputs?

INPUT	OUTPUT
DADADA	10
ACAAAB	30
AAAAAA	10
QWERTY	0

Q2 – **Fill up the gap** on this flowchart.


TEST
Set POINT_A to 0
Set POINT_B to 0
Get WORD
Repeat
len(text)
Done
If text[i]=='A'
No
Yes
If text[i]=='B'
No
Yes
Set POINT_A to 10
Set POINT_B to 20
Display POINT_A + POINT_B
END

Q3 – Implement it and test it with the inputs of the first question.

```
word=input()
PointA=0
PointB=0
sum=0
for i in range(len(word)):
    if word[i]=='A':
        PointA=10
    elif word[i]=='B':
        PointB=20
sum=PointA+PointB
print(sum)
```

EXERCICE 3

- Execute mentally the below code and write, for each step of execution the value of each variable.
- If the variable is not defined yet, write "?"

```
a = "roman"
b = a[2]
c = a + b
a = c[-1]
```

STEP	A	B	C
1	"roman"		
2	"roman	"m"	
3	"roman"	"m"	"romanm"
4	"m"	"m"	"romanm"