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 set the variable to store the value of input |
| Decision | Yes |  |
| Repeat | No | Just input and print the result after finished the decision. |
| Input / Output | Yes | To print the result |

**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 | False |
| 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)

# this code is not error, but if input one of the numbers it’s also true at the first of the conditions, so that’s mean no need to have second and third condition.

**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)

# inRange still true. Because all 4 condition no one can true.

**Q7**– Write your own good code to solve this problem.

This time, you can us **1 condition** only

# 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 and value<=10 or value>=29 and value<=51 or value>=76 or value<=101:

inRange = True

print(inRange)

# 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 |  |
| ACAAAB |  |
| AAAAAA |  |
| QWERTY |  |

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

Set POINT\_A to 0

Get *WORD*

Yes

Set POINT\_B to 0

No

Done

Set POINT\_A to 10

TEST

If AND

Yes

Set POINT\_B to 20

No

Display POINT\_A + POINT\_B

END

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

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 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |