

## MINI PROJECTS WEEK 1

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### PROJECT 01 : Dice Roller

Description :

You will write a program that generate dices results.  
One dice contain 6 values [ 1 / 2 / 3 / 4 / 5 / 6 ]

The program will first show: **"Welcome to the dices game!"**  
Then it will ask you to enter a number of dices you want to roll.  
**"Enter the number of dices you want to roll: "**

If nothing is passed you must write the following message:  
**"USAGE: The number must be between 1 and 8"**  
and then the program will ask you again:  
**"Enter the number of dices you want to roll: "**

**(The number must be always between 1 and 8 else you will display the usage message above)**

If you enter 1, you must generate one random number and give the following output: **"RESULT: 4"** If you enter a number between 2 and 8, you must generate the following output:

```
Dice 1: 4
Dice 2: 3
Dice 3: 1
Dice 4: 6
=====
RESULT: 14
=====
```

**(Result is the total of all the dice numbers value. 4+3+1+6=14)**

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Make sure that you display exactly “=====” before and after the result (10 times ‘=’ symbol). Or you will lose your points. :-)

Requirements :

- Program must be named : `01_dice.py` and saved into `week01/projects`
- **You are forbidden to use array for this project.**
- Use variables to make your code CLEAN (example you can create a constant like that : `INTRO_MESSAGE = “Welcome to the dices games”`)

Hint :

- ❖ print function
- ❖ random function
- ❖ loop
- ❖ read the description, the requirements AGAIN
- ❖ make sure that your output is EXACTLY like the output below.

Output :

```
$ python 01_dice.py
Welcome to the dices game!
Enter the number of dices you want to roll: hello
USAGE: The number must be between 1 and 8
Enter the number of dices you want to roll: 1
RESULT: 4
```

```
$ python 01_dice.py
Welcome to the dices game!
Enter the number of dices you want to roll: 3
Dice 1 : 3
Dice 2 : 5
Dice 3 : 1
=====
RESULT: 9
=====
```

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## PROJECT 02 : Magic Number Game

### Description :

You will write a small game called “Guess the number”: The computer will ‘think’ of a random number from 1 to 100. Then we will ask you to guess it, for each of your answer there are 3 possibilities:

- “Too high, try again!”
- “Too low, try again!”
- “It took you <COUNT> turns to guess my number which was <N>!”

At the beginning the program will start with the following message :  
“Hello, what is your name?”

Then will wait for your input.

After that a second message will appear:

“Well <NAME>, try to guess the number I have in mind!”

Until you not find the correct number, the program will display one of the three message above.

If you win, the computer will ask you:

“Do you want to play again? [Y/N]”

If you write “Y” the game start again.

If you write “N” the program will write:

“Ok, bye <NAME>! See you later!”. Then the program will stop,

If you write anything else the program will display:

“Sorry, I did not understand. Let me repeat:”

“Do you want to play again? [Y/N]”

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Requirements :

- Program must be named : `02_magic.py` and saved into `week01/projects`
- If the player find the answer in one time: write “You won in 1 turn only, that’s amazing!” else “It took you <COUNT> turns to guess my number which was <N>!”
- **make sure you have no misspelling characters or you will lose points!**

Hint :

- ❖ print function
- ❖ random function
- ❖ input function
- ❖ loop

Output :

```
$ python 02_magic.py
Hello, what is your name?
>> Kevin
Well Kevin, try to guess the number I have in mind!
>> 50
Too high, try again!
>> 40
Too low, try again!
>> 44
It took you 3 turns to guess my number which was 44!
Do you want to play again? [Y/N]
>> I don't know
Sorry, I did not understand. Let me repeat:
Do you want to play again? [Y/N]
>> N
Ok, bye Kevin! See you later!
```

**⚠ Warning ⚠** Make sure that you read all the description and don't forget any case. ALL sentences must be written as mentioned in the description and respect the case. **You should take a piece of paper and write down the program flow before you start writing the code.**

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## PROJECT 03 : Tax Calculator

### Description :

You will write a program that calculate tax from given amount and rate.  
For example, 14% of 10000\$ equal 1400\$

At launch the program display:  
"Please enter your amount: "

You must enter a **positive number** else the program will display:  
"Number is incorrect, try again."

Once a valid number is enter, the program will display:  
"Please enter tax rate:"

You must enter a **value between 1 and 99** else the program will display:  
"Rate is incorrect, try again."

Once done, the program will display :

```
=====
AMOUNT: <AMOUNT_ENTERED>$
RATE: <TAX_RATE>%
=====
TAX: <TAX_AMOUNT>$
NET: <AMOUNT_ENTERED - TAX_AMOUNT>$
=====
```

### Requirements :

- Program must be named : **03\_tax.py** and saved into **week01/projects** folder
- **Make sure that all the output correspond to the description.**

### Hint :

- ❖ print function
- ❖ input
- ❖ basic maths

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❖ string format

Output :

```
$ python 03_tax.py
Please enter your amount:
>> Abc
Number is incorrect, try again.
Please enter your amount:
>> 11111
Please enter tax rate:
>> 999
Rate is incorrect, try again.
Please enter tax rate:
>> 14
```

```
=====
AMOUNT: 11111$
RATE: 14%
=====
TAX: 1555.54$
NET: 9555.46$
=====
```

You must convert your output to get only two numbers after the '.' :

**INCORRECT: 793.6428571428571**

**CORRECT 793.64**

**To do so, you can use this piece of code:**

```
amount = 793.6428571428571
'{:.2f}'.format(amount)
print(amount)
```

OUTPUT:

```
>> 793.64
```

## **Warning**

MAKE SURE THAT ALL YOUR PROJECTS AND EXERCISES ARE WELL TESTED AND YOU DID NOT FORGET EVEN A SINGLE CHARACTER. MAKE SURE THAT YOUR FILENAMES ARE CORRECT. MAKE SURE THAT YOUR PROJECTS AND EXERCISES RESPECTS ALL THE REQUIREMENTS.

**YOU MUST SUBMIT YOUR PROJECTS AND EXERCISES  
BEFORE FRIDAY 24.05.2019 11:42:00 PM  
([kevin.sabbe@kit.edu.kh](mailto:kevin.sabbe@kit.edu.kh))**