



Study

Read Chapter 5, section 5.1, 5.3, 5.5, 5.6, 5.7 and 5.10 of “How to Think Like a Computer Scientist: Learning with Python 3”:

<http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf>

And then answer the following questions:

1. What is Boolean? Write down 3 different expression that results a Boolean type (i.e. 5 == 6)
2. What is a flow chart? Draw flow chart for the following code snippet: (you can draw on a paper, take a picture of it)

```
if name == "Anh Quan":  
    print("Hand some")  
elif name == "Minh Duc":  
    even_more_handsome = True  
else:
```

```
webbrowser.open("https://www.youtube.com/watch?v=04854XqcfCY")
```

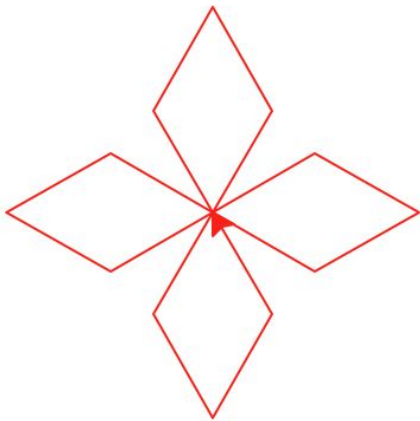
3. What is nested conditionals? Write a piece of code that uses nested conditionals



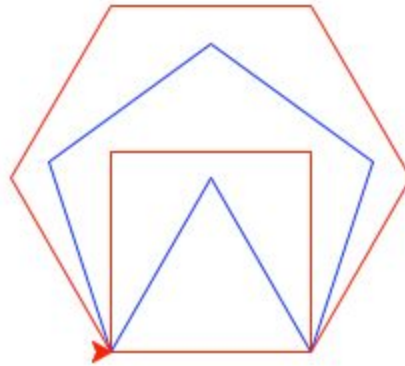
Turtle exercises

Using turtle to draw the following shapes:

1.



2.





Serious exercises

1. Write a program that asks user their height (cm) and weight (kg), and then calculate their BMI (Body Mass Index):

$$\text{BMI} = \text{mass (kg)} / (\text{height(m)} \times \text{height(m)})$$

Note: you must do the conversion from cm to m before calculation

Then based on the BMI, tell them that they are:

- Severely underweight if BMI < 16
- Underweight if BMI is between 16 and 18.5
- Normal if BMI is between 18.5 and 25
- Overweight if BMI is between 25 and 30
- Obese if BMI is more than 30

2. Write a program that

- a. Asks users enter a number n and then calculates factorial of n : $(1 * 2 * 3 * \dots * n)$

3. Print out the following patterns:

- a.

- i. 20 numbers, starting from 0

```
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
```

- ii. Ask users to enter a number, then print n positive numbers from 0 to $n-1$:

```
Enter a number: 17
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
```

- b.

- i. 1's and 0's, consecutively

```
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
```

- ii. Ask users to enter a number n , then print n 1's and 0's in total consecutively:

```
Enter the total number of 1's and 0's: 19
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
```

c.

i. 9 x 9 numbers (multiplication table)

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

ii. Ask user to enter a number n, then print n x n numbers, following multiplication table pattern:

Enter a number: 10									
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

- d.
- i. 10 x 10 1's and 0's, consecutively

```
1 0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1 0
1 0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1 0
1 0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1 0
1 0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1 0
1 0 1 0 1 0 1 0 1
0 1 0 1 0 1 0 1 0
```

- ii. Ask users to enter a number n, then print n x n 1's and 0's, consecutively

```
Enter a number: 10
1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1
```



Tools preparation

Watch the homework submission tutorial