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 == "Dinh Quy":
    print("Hand some")
elif name == "Tuan Anh":
    even_more_handsome = True
else:
    webbrowser.open("https://www.youtube.com/watch?v=04854XqcfCY")
```
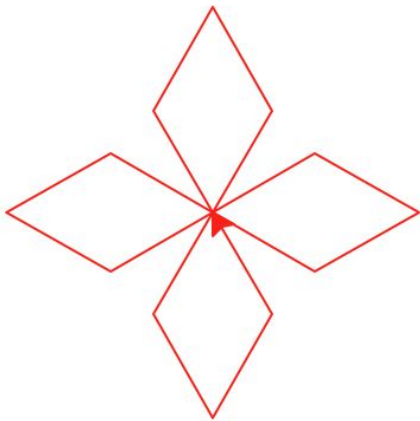
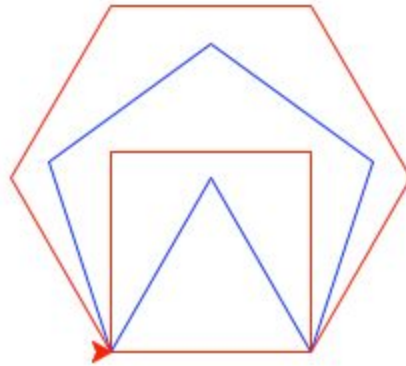3. What is nested conditionals? Write a piece of code that uses nested conditionals

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):

BMI = mass (kg) / (height(m) x 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 *... *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
```

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