Activity 04 | P1 | P2 | P3 | P4 | P5 | P6

Activity 04: Functions

Def myFunction ()

```
#program does nothing as written
Def happyBirthday (Name):
    print ("Happy Birthday to you!")
    print ("Happy Birthday to you!")
    print ("Happy Birthday, dear " + Name)
    print ("Happy Birthday to you!")
```

```
# This is the Call Statement
happyBirthday (Name)
```

Here are **simple** rules to **define** a **function** in **Python**.
Function blocks begin with the keyword **def** followed by the **function** name and parentheses ( ) . Any **input parameters** or arguments should be **placed within these parentheses**.
You can also **define** parameters inside these parentheses.

Use your school **OneDrive** store your Digital Solutions work.
Naming Convention required = **DS_Surname_FirstName_ID**
Eg DS_Mathews_Mike_0123456

Save this file to that Folder as **"Activity04.docx"**
Note: you will also save the python files (x6)
eg **Act04_proj1**.py (+ Act04_proj2……proj6)

Project 1

Write a Python program has a welcome Function defined and uses a **Name Variable** to be entered by the user and used in the happy Birthday Song.

Sample **output** should look like this:

```
What is your Name :Patrick
Happy Birhday to you
Happy Birhday to you
Happy Birthday dear Patrick
Happy Birhday to you
```

```
"""
File : Act04_proj1.py
Name : Michael Mathews   Date : 25/01/2020
Program Purpose :Sing Happy Birthday using functions
"""

def HappyBday():
    print("Happy Birhday to you ")
```

Project 2

Write a Python program uses **Def** functions for calculating the area and perimeter of a rectangle when given the Width and height

```
Enter the Base of the Rectangle :12
Enter the Height of the Rectangle :5

Area of the Rectangle is : 60.00

Perimeter of the Rectangle is : 34.00
```

Sample **output** should look like this:

Note Sample data in yellow

```
"""
File : Act04_proj2.py
Name : Michael Mathews    Date : 25/01/2020
Program Purpose : Calculate and display the Area of a Rectangle
When given the base and height by user input
"""
```

Project 3

Write a Python program **function** to Calculate the **Area** and **Circumference** of a Circle when the Radius is entered by the user.

```
Enter the radius of the circle :24

Area of the circle is : 1809.56

Circumference of the circle is : 150.80
```

Answers should be given with 2 decimal places (**use pi =3.1416**)

Sample **output** should look like this:

```
"""
File : Act04_proj3.py
Name : Michael Mathews      Date : 25/01/2020
Program Purpose : Calculate and display the Area and Circumference
of a circle  When given the radius by user input
"""
```

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Project 4

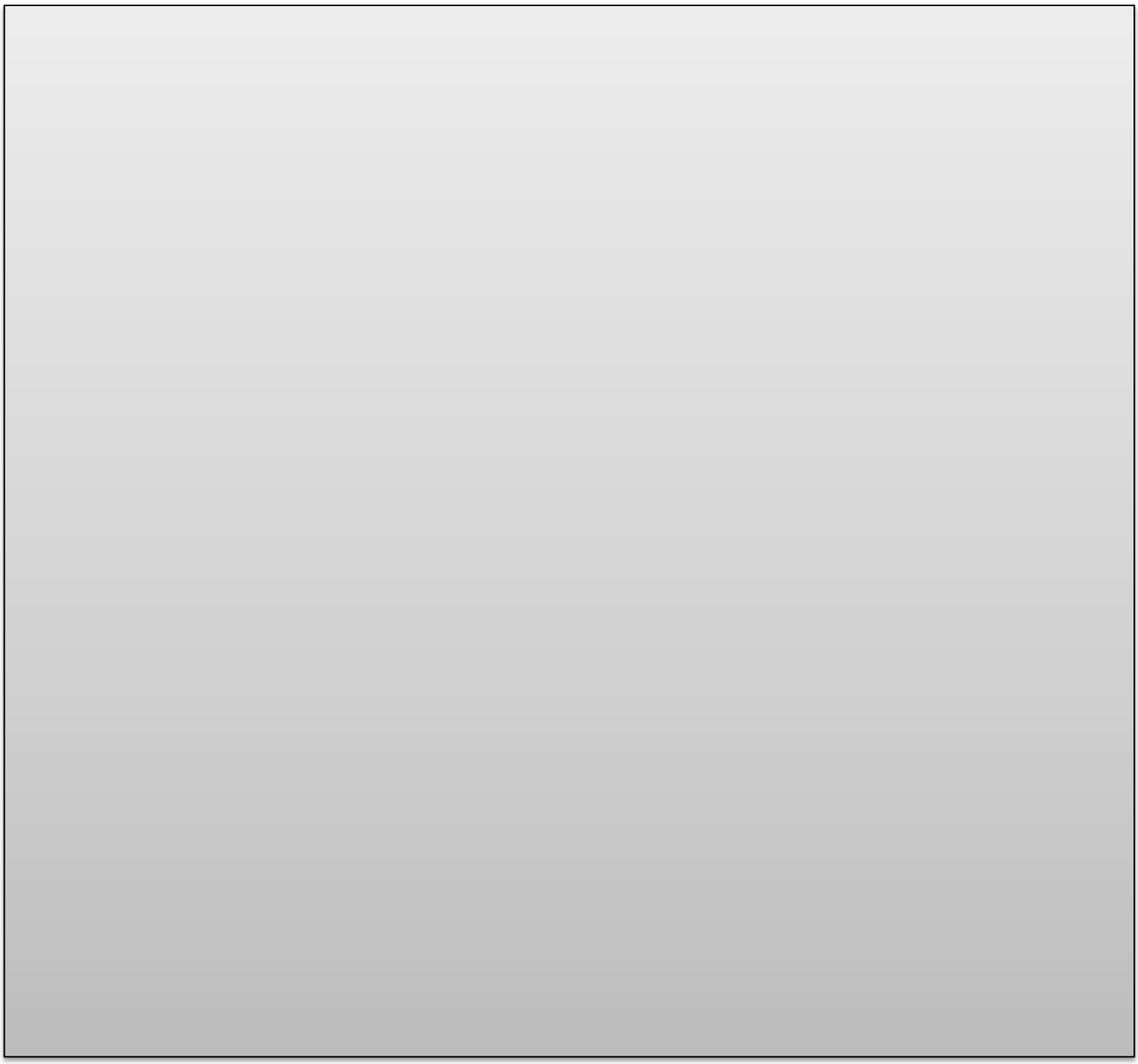
Create a python program that prompts a user for
height and base

Then use functions
To give the
Area of **Triangle**
Area of **Rectangle**
and Area of **Square**

```
What is the base of the shape : 10
What is the height of the shape : 6

The Triangle area is  30.0  square units

The Rectangle area is  60  square units

The Square area is  100  square units
```

Sample **output** should look like this:

```
"""
File : Act04_proj4.py
Name : Michael Mathews    Date : 25/01/2020
Program Purpose : Area of Triangle Rectangle and square
"""
```



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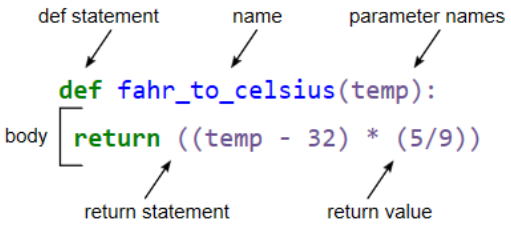
Project 5

Write a new Python program that defines functions that converts temperatures from Fahrenheit to Celsius and Celsius To Fahrenheit

```
def fahr_to_celsius(temp):
    return ((temp - 32) * (5/9))
```



Sample **output** should look like this:

```
Welcome to the Temperature Converter

1 - Convert Farenheit to Celsius
2 - Convert Celsius to Farenheit
3 - Display the freezing and boiling points
0 - Exit

Please Select:1

Please enter the temperature in Farenheit: 90
90.0 Farenheit in Celsius is 32.22222222222222 degrees.

1 - Convert Farenheit to Celsius
2 - Convert Celsius to Farenheit
3 - Display the freezing and boiling points
0 - Exit

Please Select:2

Please enter the temperature in Celsius: 25
25.0 Celsius in Farenheit is 77.0 degrees.

1 - Convert Farenheit to Celsius
2 - Convert Celsius to Farenheit
3 - Display the freezing and boiling points
0 - Exit

Please Select:3

The boling temperature is 100.0 C and 212 F.
The freezing temperatures are 0.0 C and 32 F.

1 - Convert Farenheit to Celsius
2 - Convert Celsius to Farenheit
3 - Display the freezing and boiling points
0 - Exit

Please Select:0
Thanks for use the Temperature convertor.  Stay Cool !
```

```
# File : Act04_proj5.py
# Name : Michael Mathews  Date : 1/4/19
# Program Purpose : Convert Temperature
# Farenheit to Celsius,Celsius to Farenheit
# Show Boiling and Freezing Points for both

def fahr_to_Celsius():
    far = float(input("Please enter the temperature in Farenheit: "))
    cels = ((far-32)*(5/9))
    print (far,"Farenheit in Celsius is",cels,"degrees.")
    print()
def Celsius_to_Fahr():
    cel = float(input("Please enter the temperature in Celsius: "))
    farh = ((cel*(9/5)+32))
    print (cel,"Celsius in Farenheit is",farh,"degrees.")
    print()
def FreezeBoil():
    print ("The boling temperature is 100.0 C and 212 F.")
```

Project 6

Create a Python program which allows users a choice to select a shape and have the volume calculated and displayed. Note users will need to be prompted to enter the dimensions of the shape.

Sample **output** should look like this:

Note this module as the **main** function,

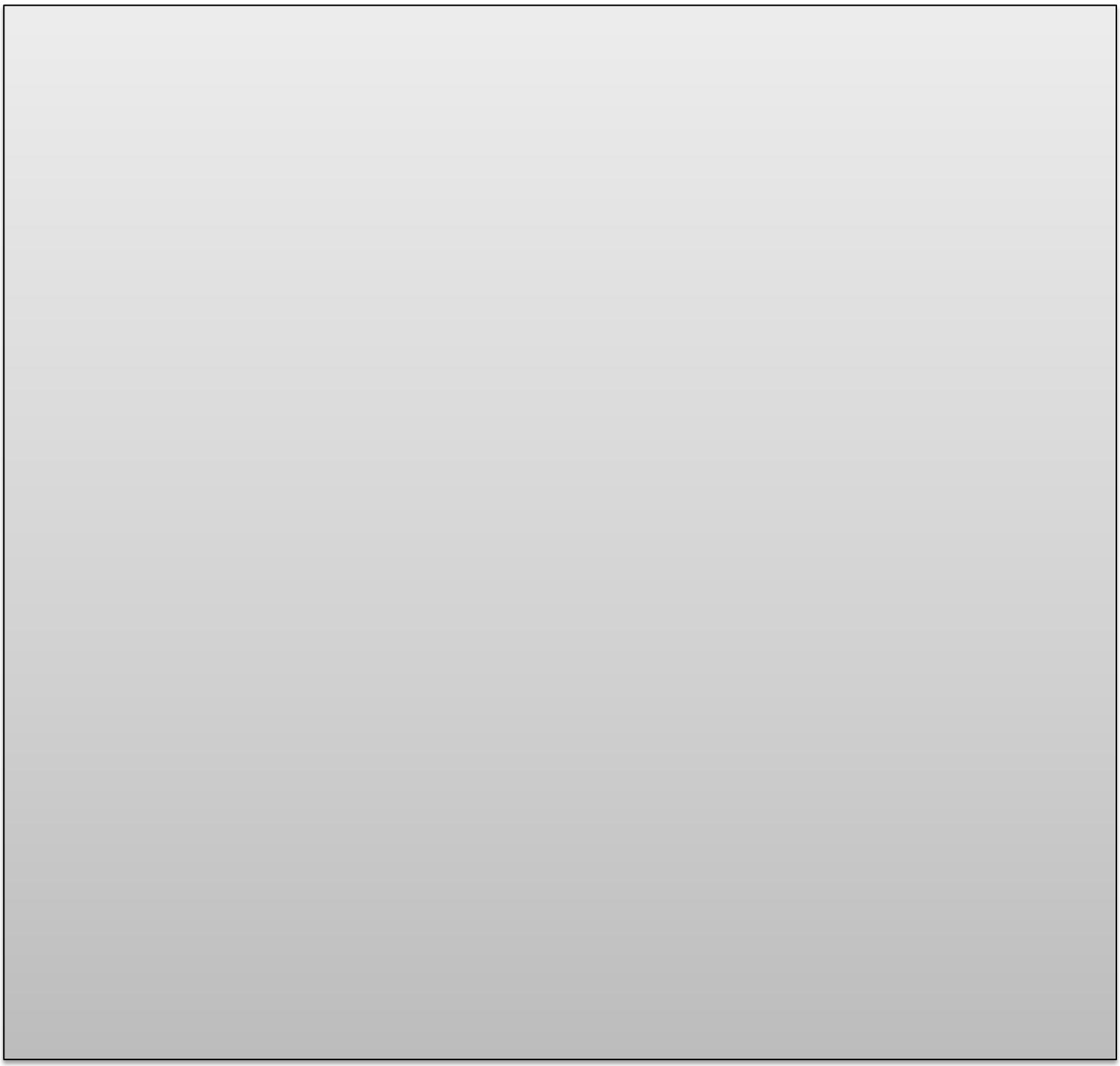
```
def main():
```

Note the code to run this module as the **main** function,
main()

```
if __name__ == "__main__":
    main()
```

```
Welcome to the Volume Solver!
-----------------------------
1) Volume of a cube
2) Volume of a box
3) Volume of a sphere
X) Exit

 Your choice ? 1
side ? 3
Volume_of_cube with side 3.0 is 27.0
cubic units

Welcome to the Volume Solver!
-----------------------------
1) Volume of a cube
2) Volume of a box
3) Volume of a sphere
X) Exit

 Your choice ? 2
Width ? 2
Length ? 3
Depth ? 4
Volume of rectangle with
width = 2.0, length = 3.0, depth = 4.0
   is   24.0 cubic units

Welcome to the Volume Solver!
-----------------------------
1) Volume of a cube
2) Volume of a box
3) Volume of a sphere
X) Exit

 Your choice ? 3
Radius? 4
Volume of sphere with radius 4.0 is
268.082573106329

Welcome to the Volume Solver!
-----------------------------
1) Volume of a cube
2) Volume of a box
3) Volume of a sphere
X) Exit

 Your choice ? x
Goodbye!
>>>
```

```
"""
Volume solver - Collection of methods for calculating various volume formulas
using floats or decimals yet
"""
import math

def volume_of_cube():
    side =float( input("side ? "))
    answer = side * side * side
    print(f"Volume_of_cube with side {side} is {answer} cubic units")
```



```
# If we're running this module as the main program, execute main()
if __name__ == "__main__":
    main()
```

Challenge

Create a Python program that checks and illustrates when 3 numbers are Pythagorean numbers ie $a^2 + b^2 = c^2$

```
Enter three numbers seperated by a space: 6 8 10
Are these Pythogorean Triplets?

  |
  | .
6 |   . 10
  |     .
  |       .
  --------------
        8
Ohh yeah!
Do you want to continue? (Y/N) y

Enter three numbers seperated by a space: 3 5 7
Are these Pythogorean Triplets?

 Nope - wrong numbers.
Do you want to continue? (Y/N)
```

```
# File : Act04_proj6.py
# Name : Michael Mathews
# Date : 1/4/19
# Program Purpose : Checks if three numbers are pythorean numbers

def checkPythogoreanTheorem(a,b,c):
    if(((a**2)==((b**2)+(c**2))) or ((b**2)==((c**2)+(a**2))) or ((c**2)==((a**2)+(b**2)))):
```