Whitecliffe Auckland | Manukau | Wellington | Christchurch

Course Title: IT5016: Software Development Fundamentals

Week: 3 and 4

Active Learning Session - 2

Learning Outcomes:

- Coding practice to basic Python language syntax
- Apply syntax rules and employ good coding practices

Learning Objectives:

- To learn python fundamentals
  - Variables
  - User inputs
  - Arithmetic operations
  - Logical operations
  - If. Else
  - Loops

REMEMBER TO TAKE A BREAK EVERY 50 MINUTES

Activity 1 **Suggested completion time: 30 Minutes**

Write a Python program that calculates a dog's age in dog's years.

Note: For the first two years, a dog year is equal to 10.5 human years. After that, each dog year equals 4 human years.

Your program should look as follows:

```
Input a dog's age in human years: 15
The dog's age in dog's years is 73
```

Activity 2 **Suggested completion time: 30 Minutes**

Write a Python program to convert month name to a number of days.

Your program should look as follows:

```
Input the name of Month: February
No. of days: 28/29 days
```

Course Title: IT5016: Software Development Fundamentals

Activity 3

Suggested completion time: 30 Minutes

Write a Python program to check a string represent an integer or not.

Your program should look as follows:

```
Input a string: Python
The string is not an integer.
```

Activity 4

Suggested completion time: 40 Minutes

Write a Python program that ask user to input two numbers. Check if both numbers are divisible by 2 or 3, if yes multiply them and print them on screen. If not, add them and then print it on screen.

Your program output should look as follows:

```
Enter two integers: 15, 30
Divisible By 2 Or 3(15, 30) → 450

Enter two integers: 2, 90
Divisible By 2 Or 3(2, 90) → 180

Enter two integers: 7, 12
Divisible By 2 Or 3(7, 12) → 19
```

Activity 5

Suggested completion time: 50 Minutes

Write a menu driven Python program that give user options to perform temperature conversion. Your code should be able to convert temperature from Celsius to Fahrenheit and vice versa.

Your program output should look as follows:

```
*****************************
TEMPERATURE CONVERSION PROGRAM
*****************************

Enter 1. For Celsius to Fahrenheit
Enter 2. For Fahrenheit to Celsius
Enter 3 to Quit: 2

Enter Fahrenheit Temperature: -15
-15 Fahrenheit is equivalent to "-9.44" Celsius

Enter 1. For Celsius to Fahrenheit
Enter 2. For Fahrenheit to Celsius:
Enter 3 to Quit: 1

Enter Celsius Temperature: 53
53 Celsius is equivalent to "127.4" Fahrenheit
```

Course Title: IT5016: Software Development Fundamentals

```
Enter 1. For Celsius to Fahrenheit
Enter 2. For Fahrenheit to Celsius:
Enter 3 to Quit: 3
```

Note: Temperature below -271.15°C (absolute zero) does not exist on earth!

Activity 6	**Suggested completion time: 50 Minutes**

Write a Python program that takes distance and time as input and displays the speed in, meters per second, kilometres per hour and miles per hour.

Your program should look as follows:

```
Input distance (meters): 50000
Input time (hour): 1
Input time(minutes): 35
Input time(seconds): 56


Your speed in meters/sec is 8.686588
Your speed in km/h is 31.27172
Your speed in miles/h is 19.4355
```

Some hints

1. You need to do time conversions
2. You need to do distance conversions

Activity 7	**Suggested completion time: 30 Minutes**

Write a Python program that takes 10 numbers as input from user and find their sum and average.

Your program should look as follows:

```
Enter 10 Integers: 1 2 3 4 5 6 7 8 9 10

Sum of the Integers is: 55
Average of the Integers is: 5.5
```

Whitecliffe Auckland | Manukau | Wellington | Christchurch

Course Title: IT5016: Software Development Fundamentals

Activity 8 | **Suggested completion time: 30 Minutes**

Write a program in Python Sharp to display the multiplication table of a given integer.

Your program should look as follows:

```
Enter an Integer number (Table to be calculated): 15

15 X 1 = 15
...
...
...
15 X 10 = 150
```

CHALLENGE ACTIVITY

Write a Python program that prints the table from 1 to 12. Each row should display 4 tables with proper format.

Your program output should look as follows:

```
1 x 1   =   1        .....        .....        4 x 1   =   4
1 x 2   =   2        .....        .....        4 x 2   =   8
1 x 3   =   3        .....        .....        4 x 3   =  12
1 x 4   =   4        .....        .....        4 x 4   =  16
1 x 5   =   5        .....        .....        4 x 5   =  20
1 x 6   =   6        .....        .....        4 x 6   =  24
1 x 7   =   7        .....        .....        4 x 7   =  28
1 x 8   =   8        .....        .....        4 x 8   =  32
1 x 9   =   9        .....        .....        4 x 9   =  36
1 x 10  =  10        .....        .....        4 x 10  =  40
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
        .....                     .....                   .....
9 x 1   =   9        .....        .....        12 x 1   =  12
9 x 2   =  18        .....        .....        12 x 2   =  24
9 x 3   =  27        .....        .....        12 x 3   =  36
9 x 4   =  36        .....        .....        12 x 4   =  48
9 x 5   =  45        .....        .....        12 x 5   =  60
9 x 6   =  54        .....        .....        12 x 6   =  72
9 x 7   =  63        .....        .....        12 x 7   =  84
9 x 8   =  72        .....        .....        12 x 8   =  96
9 x 9   =  81        .....        .....        12 x 9   = 108
9 x 10  =  90        .....        .....        12 x 10  = 120
```

Course Title: IT5016: Software Development Fundamentals

Note: Record your time and let's see who the fastest coder in this class is.

RESOURCES

Following is the list of resources that can be used to complete the above given activities:

- Resources available on CANVAS
- Week 2 and 3 sessions.
- Web Search

SUBMISSION INSTRUCTIONS

Please upload your code on GitHub.