Institute of Technology Tallaght
Department of Computing

Software Development 1 –

Worksheet/Laboratory

Instructions: After solving all the exercises, copy all the python files of each exercise, place them in a folder, and zip it. Upload the .zip file.

Exercise 1.

Create a program to read values representing a time duration in hours, minutes, and seconds, then print the equivalent total number of seconds.

```
"""
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SDev 1 - Python
"""
SECS_PER_MINUTE = 60
SECS_PER_HOUR = 3600
# input from user
hours = input("Please enter the number of hours: ")
minutes = input("Please enter the number of minutes: ")
seconds = input("Please enter the number of seconds: ")

# convert to numbers
hours = int(hours)
minutes = int(minutes)
seconds = int(seconds)

# Math
total_seconds = (hours * SECS_PER_HOUR) + (minutes * SECS_PER_MINUTE) + seconds

# output
print("The total seconds is :", total_seconds)
```

Exercise 2.

Write a Python program, which accepts the radius of a circle from the user, and compute the area. Area of a circle is πr^2, π is approximately 3.14159.Print the radius and the area of the circle in a single print statement and round the area to 3 decimal places.

```
PI = 3.14159
radius = float(input("Enter radius:"))
area = PI * radius ** 2

print("The area of the circle with radius", radius, "is", round(area, 3))
```

Exercise 3.

Three letter acronyms are common in business, IDE(Integrated Development Environment), PVM (Python Virtual Machine). Write a program that allows a user to enter three words and display the appropriate three-letter acronym. The three letter acronym should be stored in one variable.

```
word1 = input("Enter the first word: ")
word2 = input("Enter the second word: ")
word3 = input("Enter the third word: ")

acronym = word1[0] + word2[0] + word3[0]
acronym = acronym.upper()

print("You entered", word1, word2,word3)
print("Your acronym is", acronym)
```

Exercise 4.

Write a Python program that allows the user to enter a password.
Print the length of the password and whether the password contains the symbol !

```
password = input("Enter your password: ")
print("Your password is ", len(password), "characters long")
print("Your password contains the symbol !", ("!" in password))
```

Exercise 5.

Write a Python program the allows the user to enter a word from the keyboard, the word must be at least 4 characters long.
Create a new string from the first 2 and the last two characters of the entered word.
Print the word entered by the user and the new word created by the program.

```
word = input("Enter a word, it must be 4 characters long: ")
new_word = word[:2] + word[-2:]
print("The word entered is ", word)
print("The word created is ", new_word)
```

Exercise 6.

Write a Python program, which accepts a string and a number from the user and creates a new string, which consists of the inputted string repeated number times but with a space between each string. There should be no space after the last occurrence of the string. Enclose the outputted string in quotes.

Sample output below:

```
Input your string : Python
Input the number : 3
Your original word is Python
The newly created string is "Python Python Python"
```

```
word = input("Input your string: ")
number = int(input("Input the number: "))
new_word = (word + " ") * (number - 1) + word
print("The original string is", word)
print("The newly created string is \"" + new_word + "\"")
```

Exercise 7.

Write a Python program to add .py to the end of a given filename entered by the user.
Print the original and the new Python filename created.

```
word = input("Enter a filename ")
new_word = word + ".py"
print("New Python filename is ", new_word)
```

Exercise 8.

Write a program that reads a value representing a number of seconds. Print the equivalent amount of time in hours, minutes, and seconds.

```
"""
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SDev 1 - Python
"""
SECS_PER_HOUR = 3600
SECS_PER_MINUTE = 60
# input from user
seconds = input("Please enter the number of seconds: ")

# Convert to integer
seconds = int(seconds)

# calculate hours if any
hours = seconds // SECS_PER_HOUR

# get remainder
seconds = seconds - (hours * SECS_PER_HOUR)
# or seconds = seconds % SECS_PER_HOUR

# get remainder
minutes = seconds // SECS_PER_MINUTE
seconds = seconds - (minutes * SECS_PER_MINUTE)
# or seconds = seconds % SECS_PER_MINUTE

print("Hours:", hours, "Minutes: ", minutes, "Seconds: ", seconds)
```