PEMROGRAMAN ANALISIS DATA

“LATIHAN PYTHON”

TUGAS KE – 1

DISUSUN OLEH :

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A. Soal Latihan

Exercise 13: Making Change

(*Solved, 35 Lines*)

Consider the software that runs on a self-checkout machine. One task that it must be able to perform is to determine how much change to provide when the shopper pays for a purchase with cash.

Write a program that begins by reading a number of cents from the user as an integer. Then your program should compute and display the denominations of the coins that should be used to give that amount of change to the shopper. The change should be given using as few coins as possible. Assume that the machine is loaded with pennies, nickels, dimes, quarters, loonies and toonies.

> A one dollar coin was introduced in Canada in 1987. It is referred to as a loonie because one side of the coin has a loon (a type of bird) on it. The two dollar coin, referred to as a toonie, was introduced 9 years later. It's name is derived from the combination of the number two and the name of the loonie.

Exercise 14: Height Units

(*Solved, 16 Lines*)

Many people think about their height in feet and inches, even in some countries that primarily use the metric system. Write a program that reads a number of feet from the user, followed by a number of inches. Once these values are read, your program should compute and display the equivalent number of centimeters.

> Hint: One foot is 12 inches. One inch is 2.54 centimeters.

Exercise 17: Heat Capacity

(*Solved, 23 Lines*)

The amount of energy required to increase the temperature of one gram of a material by one degree Celsius is the material's specific heat capacity, C. The total amount of energy, q, required to raise m grams of a material by ΔT degrees Celsius can be computed using the formula:

$$q = mC\Delta T$$

Write a program that reads the mass of some water and the temperature change from the user. Your program should display the total amount of energy that must be added or removed to achieve the desired temperature change.

Hint: The specific heat capacity of water is $4.186 \frac{J}{g°C}$. Because water has a density of 1.0 grams per milliliter, you can use grams and milliliters interchangeably in this exercise.

Extend your program so that it also computes the cost of heating the water. Electricity is normally billed using units of kilowatt hours rather than Joules. In this exercise, you should assume that electricity costs 8.9 cents per kilowatt hour. Use your program to compute the cost of boiling the water needed for a cup of coffee.

Hint: You will need to look up the factor for converting between Joules and kilowatt hours to complete the last part of this exercise.

Exercise 19: Free Fall

(Solved, 15 Lines)

Create a program that determines how quickly an object is travelling when it hits the ground. The user will enter the height from which the object is dropped in meters (m). Because the object is dropped its initial speed is 0 m/s. Assume that the acceleration due to gravity is $9.8\,m/s^2$. You can use the formula $v_f = \sqrt{v_i^2 + 2ad}$ to compute the final speed, v_f, when the initial speed, v_i, acceleration, a, and distance, d, are known.

B. Algoritma

- Exercise13
    1. Masukan input data jumlah pembayaran dalam jumlah_bayar
    2. Simpan jumlah_bayar/200 ke dalam toonies
    3. Simpan jumlah_bayar – (toonies * 200) ke dalam jumlah_bayar
    4. Simpan jumlah_bayar/100 ke dalam loonies
    5. Simpan jumlah_bayar – (loonies * 25)
    6. Simpan jumlah_bayar/10 ke dalam dimes
    7. Simpan jumlah_bayar – (dimes * 10)
    8. Simpan jumlah_bayar/5 ke dalam nickles
    9. Simpan jumlah_bayar – (nickles * 5)
    10. Simpah jumlah_bayar/1 ke dalam pennies
    11. Simpan jumlah_bayar – (pennies * 1)
    12. cetak
- Exercise14
    1. Masukan input data tinggi badan dalam tinggi_badan
    2. Simpan tinggi_badan * 12 kedalam tinggi_inches

3. Simpan tinggi_inches * 2.54 kedalam tinggi_centimeters
4. cetak

- Exercise17
    1. Masukan input data masa dalam mass
    2. Masukan input data temperature dalam celcius
    3. Simpan mass * 4.186 * temperature ke dalam total_amount_energy
    4. Simpan total_amount_of_energy * 2,77778e7 ke dalam kilo_watt
    5. Simpan kli_watt * 8.9 ke dalam electricity_cost
    6. cetak
- Exercise19
    1. Masukan input data tinggi dalam height
    2. Simpan $\sqrt{0^2 + 9.8 * tinggi}$ ke dalam final_speed
    3. Cetak

C. SceenShot

1. Exercise 14

Exercise14.py > ...

```
print("================================================================")
height_in_feet = input("Enter Height in feet : ")
height_in_inches = float(height_in_feet) * 12
height_in_centimeters = float(height_in_inches) * 2.54
print("Height in feet : ",height_in_feet,"\nHeight in Inches : ", height_in_inches,"\nHeight in Centimeters : ",
height_in_centimeters)
print("================================================================")
```

2. Exercise 17

Exercise17.py > ...

```
print("================================================================")
mass_of_water = float(input("Enter mass of some water : "))
temperature = float(input("Enter the temperaature change from the user : "))
total_amount_of_energy = mass_of_water * 4.186 * temperature
print("Total Amount of Energy is ",total_amount_of_energy,)
kilo_watt = total_amount_of_energy / 2.77778e-7
electricity_cost = kilo_watt * 9.8
print("cost electricity is ",electricity_cost)
print("================================================================")
```

3. Exercise 19

```python
import math
print("================================================================")
height_of_object = float(input("Insert data height of object from object to the ground : "))
final_speed = math.sqrt(math.pow(0,2)+9.8*height_of_object)
print("How quickly the object are : ",final_speed)
print("================================================================")
```

D. Analisis Hasil

1. Exercise 14

```
PS C:\Users\natha\OneDrive\Documents\Python\Laporan1> & C:/Users/natha/AppData/Local/Programs/Python/Python311/python.exe c:/Users/natha/OneDrive/Documents/Python/Laporan1/Exercise14.py
================================================================
Enter Height in feet :
```

```
PS C:\Users\natha\OneDrive\Documents\Python\Laporan1> & C:/Users/natha/AppData/Local/Programs/Python/Python311/python.exe c:/Users/natha/OneDrive/Documents/Python/Laporan1/Exercise14.py
================================================================
Enter Height in feet : 7.5
Height in feet :  7.5
Height in Inches :  90.0
Height in Centimeters :  228.6
================================================================
PS C:\Users\natha\OneDrive\Documents\Python\Laporan1>
```

Pada baris pertama mencetak ke dalam terminal “==” saya gunakan untuk pembatas antara command lain dengan hasil command yang diberikan oleh program lalu untuk baris ke dua ada input yang nanti dimasukan ke variable hight_in_feet yang nanti akan digunakan untuk variable dari height_in_inches yang didalamnya terdapat operasi height_in_feet dikali dengan 12 dan untuk height_in_centimeters juga menggunakan variable sebelumnya untuk inches dikali dengan 2.54

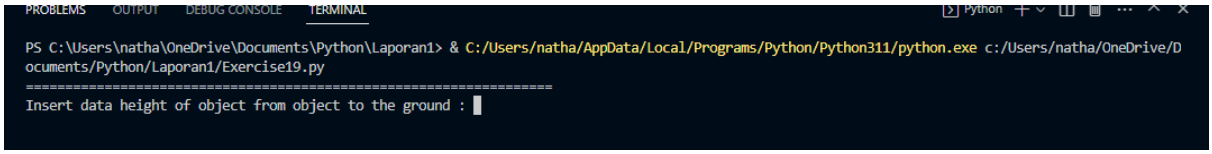
2. Exercise 17

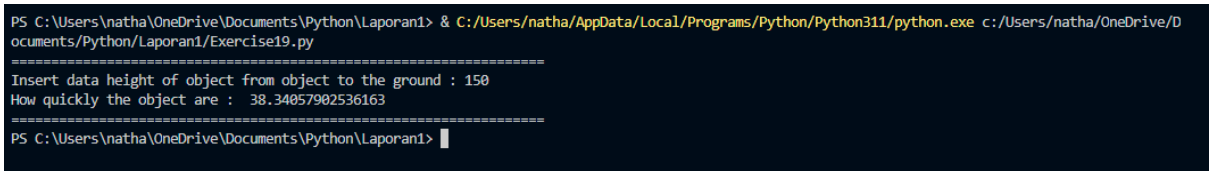
```
PS C:\Users\natha\OneDrive\Documents\Python\Laporan1> & C:/Users/natha/AppData/Local/Programs/Python/Python311/python.exe c:/Users/natha/OneDrive/Documents/Python/Laporan1/Exercise17.py
================================================================
Enter mass of some water :
```

```
PS C:\Users\natha\OneDrive\Documents\Python\Laporan1> & C:/Users/natha/AppData/Local/Programs/Python/Python311/python.exe c:/Users/natha/OneDrive/Documents/Python/Laporan1/Exercise17.py
================================================================
Enter mass of some water : 18
Enter the temperaature change from the user :
```

Sama seperti sebelumnya sekarang menggunakan variable mass_of_water dan juga temperature untuk menginputkan data yang nantinya di buat kedalam float datanya itu nanti datanya akan dilakukan operasi perkalian untuk mass_of_water dengan 4.186 dengan temperature yang dimasukan kedalam variable total_amount_of_energy lalu dicetak ke dalam terminal selanjutnya ada variable kilo_watt yang digunakan untuk menyimpan operasi dari pembagian total_amount_of_energy dengan 2.77778e-7 lalu dibawahnya ada operasi perkalian lagi untuk vairbale dari kilo_watt dengan 9.8 yang dimasukan ke dalam variable electricity_cost lalu dicetak

3. Exercise 19





Untuk exercise 19 ini menggunakan import math module yang sudah memiliki seperangkat method dan konstanta yang akan digunakan adalah untuk sqrt yaitu untuk mengakar kan dan pow untuk mempangkat kan untuk pertama menginputkan data yang nanti menjadi floating data dan dimasukan ke dalam height_of_object variable lalu dibawahnya ada final_speed variable yang didalamnya terdapat sqrt method dan juga pow untuk pow sendiri mempangkatkan 2 angka 0 dan untuk sqrt sendiri akan digunakan untuk mengakarkan hasil dari o pangkat 2 ditambah dengan 9.8 yang dikalikan dengan data dari variable height_of_object lalu di print ke dalam terminal dan hasilnya akan Nampak seperti dibawah

E. Daftar Pustaka

https://docs.python.org/3/library/math.html

https://www.w3schools.com/python/module_math.asp