

Exercises01 : 20 problems

- 1- Write a program that prompts the user to enter five test scores and then prints the average test score. (Assume that the test scores are decimal numbers.)
- 2- A plane travels 395,000 meters in 9000 seconds. Write a program to find the speed of the plane.
- 3- write a program that computes the hypotenuse of a right triangle.
- 4- Write a program the computes the distance between two points
- 5- A car starts from a stoplight and is traveling with a velocity of 10 m/sec east in 20 seconds. Write a program to find the acceleration of the car?
- 6- Write a program that convert days into years, months, weeks and days?

Example:

In 1357 days, we have 3 years, 8 months, 5 weeks and 2 days

- 7- You need to empty out the rectangular swimming pool which is 12 meters long, 7 meters wide and 2 meter depth. You have a pump which can move 17 cubic meters of water in an hour. Write a program to find how long it will take to empty your pool? (Volume = l * w * h, and flow = volume/time)
- 8- Consider the following program which contains some errors. You may assume that the comments within the program accurately describe the program's intended behavior.

Get two numbers from the user

n1 = float(input()) # 1

n2 = float(input()) # 2

Compute sum of the two numbers

print(n1 + n2) # 3

Compute average of the two numbers

print(n1+n2/2) # 4

Assign some variables

d1 = d2 = 0 # 5

Compute a quotient

print(n1/d1) # 6

```
# Compute a product
n1*n2 = d1          # 7
# Print result
print(d1)           # 8
```

For each line listed in the comments, indicate whether or not an interpreter error, run-time exception, or logic error is present. Not all lines contain an error.

- 9- Consider the following program that attempts to compute the circumference of a circle given the radius entered by the user. Given a circle's radius, r , the circle's circumference, C is given by the formula:
 $C = 2\pi r$

```
r = 0
PI = 3.14159
C = 2*PI*r
# Get the radius from the user
r = float(input("Please enter the circle's radius: "))
# Print the circumference
print("Circumference is", C)
```

- (a) The program does not produce the intended result. Why?
 (b) How can it be repaired so that it works correctly?

- 10-Write a program that computes the value of y given the following formula.

$$y = y_1 + \frac{y_2 - y_1}{x_2 - x_1} (x - x_1)$$

- 11-A piece of wire is to be bent in the form of a rectangle to put around a picture frame. The length of the picture frame is 1.5 times the width. Write a program that prompts the user to input the length of the wire and outputs the length and width of the picture frame.

12-Write a program that, given street number, street name, city name, state name, and zip code, prints the address in the following format.
street-number, street city, state zip-code

13- Suppose y, and z are integer variables and w and t are float variables. What value is assigned to each of these variables after last statement executes.

```
x = 17;  
y = 15;  
x = x + y / 4;  
z = x % 3 + 4;  
w = 17 / 3 + 6.5;  
t = x / 4.0 + 15 % 4 - 3.5;
```

14-What action must be taken before a variable can be used in a program

Write a program that does the following:

- a. Prompts the user to input five decimal numbers.
- b. Prints the five decimal numbers.
- c. Converts each decimal number to the nearest integer.
- d. Adds the five integers.
- e. Prints the sum and average of the five integers.

15-write a program that finds the square root of a given quadratic equation,
for example, $x^2 + 11x + 30$

16-write a program that swaps (exchanges) the values of two variables
e.g. if $x = 10$ and $y = 6$, the output should be $x = 6$ and $y = 10$

17-write a program that counts number of digits in an Integer
e.g. let $x = 547132$, the output is 6

18-write a program that finds the leftmost digit in a given integer numbers
e.g. if the input is 43567, the output is 4

19-write a program that finds the rightmost digit in a given integer numbers
e.g. if the input is 43567 the output is 7

20-write a python program that reverse a number assuming that number has only 3 digits.