Programming Lab Report

Vivid Padungkiatsakul 6601023620026[1]

[1]Robotic Engineering and Automation System, Faculty of Engineering, King Mongkut's University of Technology North Bangkok

[010243107] C Programming 2023

Lab Week 2

Statement, Variables and Expressions

Topic

- Structure of C program
- Statement
- Comment
- Variables
- Expressions
- Operators

Experiment I

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1 Problem description

- Write a program that stores data and also display them on the screen as follow:

2 Problem terminal text

```
Height of Somchai: 126 cm
Grade of Somjai: B
Age of Winai: 20
Weight of Anna: 50.3 kg
Gravity constant: 9.81 m/s^2
Distance from Bangkok to Nonthaburi: 53 km
```

3 Program design

- int use to make variable whole number that doesn't have decimal.
- float use to make variable whole number that have decimal.
- char use to make variable whole the character.
- We can set multiple variables in one line if that variables are same data type.

4 Program text

```c
#include <stdio.h>

int hight= 126, age = 20,distance = 53;
char grade = 'B';
float weight = 50.3, gravity = 9.81;

int main(){
    printf("Height of Somchai: %d cm\n", hight);
    printf("Grade of Somjai: %c\n", grade);
    printf("Age of Winai: %d\n", age);
    printf("Weight of Anna: %.1f kg\n", weight);
    printf("Gravity constant: %.2f m/s^2\n", gravity);
    printf("Distance from Bangkok to Nonthaburi: %d km\n", distance);
    return 0;
}
```

Experiment II

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1 Problem description

- Write a program that display result of

$$x * y - 20\%z$$

  when $x = 2,\ y = 7,\ z = 4$.

- Explain how to solve this by hand.

2 Program design

- The % is get the number that remain from division.

3 Equation solve

- so,first insert x y z in equation:

$$2 * 7 - (20\%4)$$

  Then, solve 20%5:

$$20\%4 = 0$$

  Finally, take the result from 20%5 insert in the equation:

$$2 * 7 - 0 = 14$$

  ∴The answer of these equation is 14

4 Program text

```c
#include <stdio.h>

int x = 2, y = 7, z = 4, result;

int main(){
    result = x * y - 20 % z;
    printf("Answer is %d", result);
    return 0;
}
```

5 Terminal output

```
Answer is  14
```

Experiment III

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1 Problem description

- Write a program that displays result of equation below.

$$result = \frac{4.2a + 2.8b}{\frac{5b}{a} - 7c}$$

- Also, verify your program.

2 Program design

- result is decimal. so, We set result in float variable
- For program design. We will get $a,\ b,\ c$ from user input.
- For verify program. We will set $a,\ b,\ c = 1$, and compare to answer from hand solve.

3 Equation solve

- so,first insert $a\ b\ c = 1$ in equation:

$$result = \frac{4.2(1) + 2.8(1)}{\frac{5(1)}{(1)} - 7(1)}$$

Then, solve equation:

$$result = \frac{4.2 + 2.8}{5 - 7}$$
$$result = \frac{7}{-2}$$
$$result = -3.5$$

4 Program text

```c
#include <stdio.h>

float a,b,c;
float result;
int test;

int main(){
    float a=1,b=1,c=1; //use for testing
    // printf("Enter value of a b and c: ");
    // scanf("%f %f %f", &a, &b, &c); // For user input
    result = ((4.2*a)+(2.8*b))/(((5*b)/a)-(7*c));
    printf("%f\n",result);
    test = (result == -3.5);
```

```
    //return output in True or False
    switch (test) {
        case 1:
            printf("True");
            break;
        case 0:
            printf("False");
            break;
    }
    return 0;
}
```

5 Terminal output

- User input value

```
Enter value of a b and c: 1 1 1
-3.500000
```

- Testing result:

```
-3.500000
True
```

End of Lab Experiment Week 2