Lab Exercise - Week 2

Startup

Open a terminal (Ctrl+Alt+t)

```
cd CS1020
mkdir Week2
cd Week2
```

Experiment 1.

Program name: average.c

gedit average.c &

```
/*
  Program name: average.c
  Program description: The program takes two integers as input and displays their ave
rage.
  Programmer's name: Your Name
  Date: 09-08-2016
*/


#include<stdio.h>


int main()
{
  /* x and y are two variables to store the two inputs */
  int x, y;


  /* z is the variable to store the average of x and y */
  int z;


  /* Prompt the user to enter the first number and read it*/
  printf("Enter the first number: ");
  scanf("%d",&x);


  /* Prompt the user to enter the second number and read it*/
```

```
  printf("Enter the second number: ");
  scanf("%d",&y);


  /* Compute the average */
  z = (x+y)/2;


  /* Display the result */
  printf("The average of %d and %d is %d.\n", x, y, z);


  /* Tell the operating system that everything went well */
  return 0;
}
```

Save the program average.c

Compile it using the command

```
gcc average.c -o average.out
```

The "-o average.out" tells gcc to store the compiled output (that is, the executable program) in a file named "average.out". If we do not specify this, every output program will be saved as a.out.

Run the resulting program using the command

```
./average.out
```

What is the logical mistake in the above program?

Change the program to correctly find the average of numbers like 12 and 15.

Experiment 2.

Exercise set (Theory) - 1 Question No. 3/4
Program name :ap.c

Save the program as ap.c

Compile it using the command

```
gcc ap.c -o ap.out
```

The "-o average.out" tells gcc to store the compiled output (that is, the executable program) in a file named "average.out". If we do not specify this, every output program will be saved as a.out.

Run the resulting program using the command

```
./ap.out
```

Enhance the program to output the sum of the first n terms of the arithmetic progression also.

Experiment 3. (Comments and code formatting)

The following program has 6 syntax mistakes. Find and correct all of them. Guess what the program is doing. Format the program with enough comments so that someone who does not know C-language can read and understand the program.

```
/*
Program name: .......
Programe description:
Programmer's name:
Date:
*/
int main()
int a; /* a is an integer */
int b,c;
int d;
int e;
printf("Enter a number: ");
scanf("%d", &a); /* Command to read the first integer and store it in the variable a.
*/
printf("Enter a number: ");
scanf("d", &b);
printf("Enter a number: ");
scanf("%d", &c);
d = a
e = d
if(b > d); d = b;
else e = b;
if(c < e) e = c;
if(c > d) d = c;
printf("%d, %dn", d, e);
}
```

Experiment 4.

Program name: max.c

Write a program that takes two numbers from user and gives the maximum number out of the two.

Home Work:

Homework 1.

Write a program to take two numbers a and b and print EVEN if their sum is even and print ODD otherwise.

Try to do this without finding the value of their sum.

(Hint: If a is odd and b is even, then a + b is odd)

Homework 2.

Write a program that takes two positive integers a and b as input and outputs the value of a/b rounded to the nearest integer.

For example

If a = 5 and b = 4, then the answer should be 1.
If a = 5 and b = 3, then the answer should be 2.
If a = 5 and b = 2, then the answer should be 3.

Homework 3.

Write a program that takes three integers a, b and c as input and output YES if any two of them are equal and NO otherwise.

Hint: This is a good question to practice the "else if" statement.

Good luck.

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Homework 4.

Program name: max_min.c

Write a program that takes two numbers from user and gives both the maximum of the three numbers and the minimum of the three numbers as results.

How many comparisons did your program do in total?

Can you do it using 3 comparisons?

Homework 5.

Program name : sorted.c

Write a program to take three integers a,b,c and print

ASCENDING if a <= b <= c,

DESCENDING if a >= b >= c, and

NEITHER otherwise