INC 141
Computer Programming

Lab 2

Learning Outcomes (Lab 2)

- Use input/output commands
- Use if() command

Show something on screen
printf

```
#include <stdio.h>

main ()

{



   printf("Hello World");

}
```

Tell the program to load the library for printf

Use commands in the library

Put what you want to show in double quote " "

printf
can be used with a string variable

```
#include <stdio.h>

main ()

{

   char s[10] = "Hello";


   printf(s);

}
```

Tell the program to load the library for printf

String variable

Array [ ] of char = string variable

Show value of a variable with printf

```
#include <stdio.h>

main ()

{


   int a = 2;
   printf("Hello World %d",a);

}
```


Use special character %d

Note: Use special character \n for new line

Special Characters for printf

%d	**replace with**	**int**
%f	**replace with**	**float**
%c	**replace with**	**char**
\n	**new line**	

Receive input from keyboard scanf

```
#include <stdio.h>

main ()

{

    int a;

    scanf("%d",&a);

}
```

Tell the program to load the library for scanf

& indicate pointer (use with scanf)

Receive what the user type from keyboard. Interpret it as an integer %d and put in a

Receive two numbers from the keyboard

```
#include <stdio.h>

main ()

{

   int a,b;

   scanf("%d -- %d",&a,&b);

}
```

The user has to type a phrase that match The string in the double quote “ ”.

Task 1

- **Write a program that calculate the ratio of two numbers.**
- **The program asks the user to input two numbers and receive them from the keyboard.**
- **Both numbers are point numbers**
- **Finally, the program shows the ratio on the screen.**

Submit a screenshot of your program on LEB2

Relational Operators

The relational operators are listed below.

Operator	Description
<	less than comparison
<=	less or equal comparison
==	equal comparison
>=	greater or equal comparison
>	greater comparison
!=	not equal comparison

Input:
Two numbers

Output: **Logic**

True 1
False 0

Arithmetic Operator

2 + 3 = 5 ← **Output Number**

Relational Operator

2 < 3 = 1 (True) ← **Output Logic**

Note: = and == are totally different

Logical Operators

- There are three logical operators in C:
  1) ! --- logical negation
  2) && --- logical AND
  3) || --- logical OR

x	y	!x	x && y	x || y
0	0	1	0	0
0	1	1	0	1
1	0	0	0	1
1	1	0	1	1

Input: True 1 Output: True 1
Logic False 0 Logic False 0

Please write these logic in C language

- **-2 < x < 5**

  (x > -2)&&(x < 5)

- **x is either 3 or 5**

  (x == 3)||(x == 5)

If Command

- **If Statements**
  - The syntax for an if-statement is as follows:

```
if(expression)
   statement
```

  - The statement is executed if the expression is unequal to 0.
  - If there are many commands, they need to be placed inside { }

Example:

```
int i = 1;

if(i)
  printf("Single command");

if(i > 0)
{
   i = 2;
   printf("Multiple commands");
}
```

Task 2

Write a program that calculate an absolute value of a number and print the result on screen.

- **Receive 1 integer from the keyboard**
- **Calculate the absolute value**
- **Show the result on screen**

Hint: For positive value, absolute = itself
For negative value, absolute = - itself

Submit a screenshot of your program on LEB2

Task 3 (Continue as homework)

Write a program that receives an integer from the keyboard and calculate the last digit (least significant digit) of that number.

e.g. last digit of 438 is 8
last digit of 37 is 7