**LAB # 3&4**

**OBJECT**

***DECLARING VARIABLES AND TO TAKE INPUT FROM USER.***

**THEORY**

**Building Blocks of Programming Language**

In any language there are certain building blocks:

* Operators
* Constants
* Variables
* Methods to get input from user (scanf( ), getch( ) etc.)

**Operators**

There are various types of operators that may be placed in these categories:

**Basic:**  +, - , \*, /, %

**Power:**  ^

**Assignment:** =, +=, -=, /=, \*=, %=

(++, -- may also be considered as assignment operators)

**Relational:**  <, >, <=, >= , = =, !=

**Logical:** && , || , !

**Variables and Constants**

If the value of an item can be changed in the program then it is a variable. If it will not

Change then that item is a constant. The various variable types (also called data type) in C are: int, float, char etc.

**Variable declaration:**

Variable are generally declared as:

**Type var-name;**

Here “Type” is C data and “var-name” is the variable name.

For example:-

int a;

int a,b;

int a,b,c;

**‘int’** is the data type and ‘a’ is a variable name , you can declare more than one variable at a time by using one same data type.

|  |  |  |
| --- | --- | --- |
| **BASIC DATA TYPES OF C LANGUAGE** | | |
| Character | Character data | char |
| Integer | Singled whole number | int |
| Float | Floating point number | float |
| Void | Valueless | void |
| Double | Double precision floating number | double |

**Data Type Description**

**Character:**

It is a bit long and it is most commonly used to hold a single character. A variable of type char can also be used as a “little integer” if desired.

**Integer:**

Integer may hold signed whole number (Number with no fractional part). It may hold values in the range -32768 to 32767.

**Float and Double:**

Data type float and double hold signed floating-point values, which may have fractional components. The difference between float and double is that double provide about twice the precision as does float. They both can hold very large values.

**Bitwise size of Data types**

|  |  |  |
| --- | --- | --- |
| **type** | **SIZE (Bits)** | **Range** |
| Char | 8 | -128 to 127 |
| Int | 16 | -32768 to 32767 |
| Float | 32 | 3.4 e-38 to 3.4 e+38 |
| Double | 64 | 1.7e-308 to 1.7e+308 |

The input from the user can be taken by the following techniques: scanf( ) , getch( ) , getche( ), getchar( ) etc.

**scanf ( )**

The scanf( ) is the most versatile in functionality as it can handle all of the different variables and control their formatting. This statement can be use as an input function by using this you can take an input from the user at the runtime. For this purpose the arithmetic operator for multiplication (\*) and the address operator, represented by the ampersand (&). Ampersand uses before the variable name like that:-

scanf(“ %f ” , &n);

**Example-1**

#include <stdio.h>

void main(void)

{

int a, b, c;

printf("Enter the first value:");

scanf("%d", &a);

printf("Enter the second value:");

scanf("%d", &b);

c = a + b;

printf("%d + %d = %d\n", a, b, c);

}

**TASKS TO BE PERFORMED**

1. Write a program that take four floating numbers from keyboard and prints their sum, product and average.

# PROGRAM

#include <stdio.h>

#include <conio.h>

int main(){

float a, b, c, d, result;

int choice;

printf("Enter four floating numbers: ");

scanf("\n%f",&a);

scanf("\n%f",&b);

scanf("\n%f",&c);

scanf("\n%f",&d);

printf("\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

printf("\n1-Amount in sum");

printf("\n2-Amount in product");

printf("\n3-Average of amount");

scanf("%d",&choice);

switch(choice){

case 1:

result=a+b+c+d;

printf("Sum of your amount: %f", result);

break;

case 2:

result=a\*b\*c\*d;

printf("product of amount: %f", result);

break;

case 3:

result=(a+b+c+d)/4;

printf("average of your amount: %f", result);

break;

default:

printf("you did something wrong");

}

return result;

}

1. Write a program to calculate the area of the circle, taking the value of the radius from the user.

# PROGRAM

#include <stdio.h>

#include <conio.h>

#include <math.h>

void main(){

float A, r;

printf("Enter radius of the circle: ");

scanf("%f",&r);

A=3.14\*pow(r,2);

printf("Area of a circle is: %f",A);

getch();

}

1. Write a program that prints to calculate the age in days by using the formula: days = years \* 365.

# PROGRAM

#include <stdio.h>

#include <conio.h>

int main(){

float year, age;

printf("Enter year you were born: ");

scanf("%f",&year);

age=2016-year;

printf("\nYour age in years: %f",age);

age\*=365;

printf("\nYou age in date: %f",age);

getch();

}