C Programming

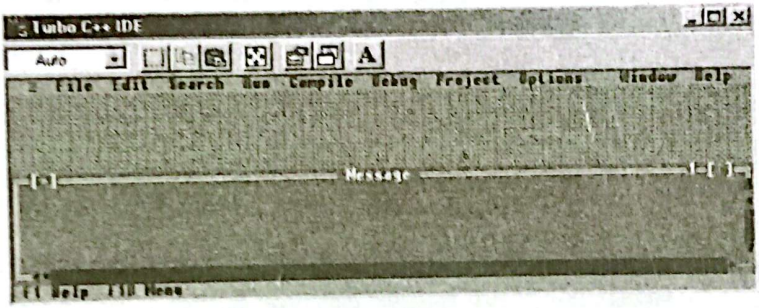
PRACTICAL 1 **Perform the following tasks and write the stepwise procedure:**

a. Install C compiler.
b. Create a New C program.
c. Save a C program.
d. Compiler a C program.
e. Execute a C program.

PROCEDURE

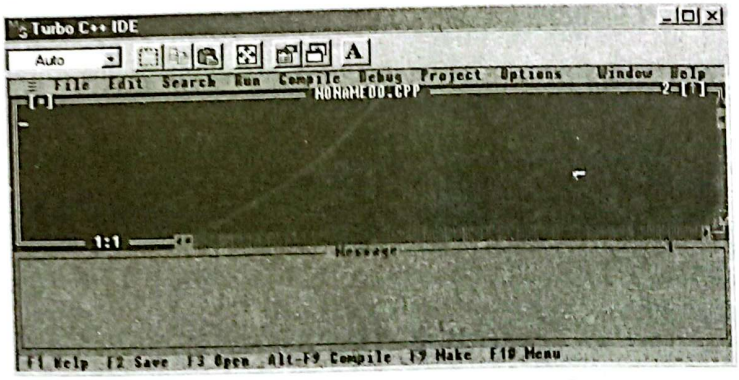
a. Installing C Compiler

1. Copy **Turbo C** compiler from the CD to the desired location or download it from the Internet.
2. Double click **Turbo C** compiler folder to open it.
3. Double click **BIN** directory to open it.
4. Double click **TC.EXE**. The Turbo C compiler will start.



b. Creating a New C Program

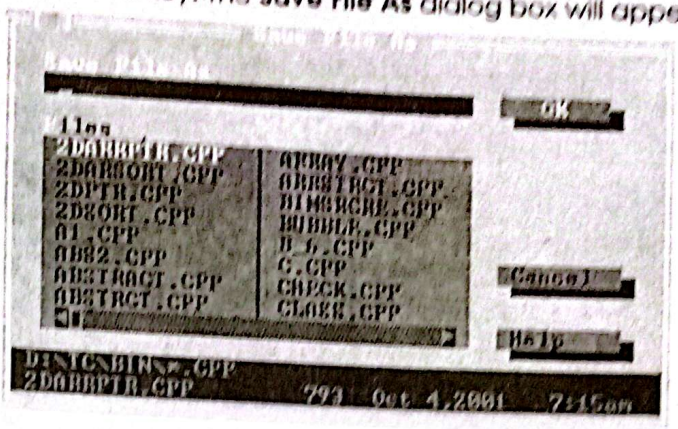
1. Start C compiler.
2. Click **File > New**. A new blank file will appear.



3. Write the desired statement for the program

c. Saving a C Program

1. Select **File > Save** OR press **F2** key. The **Save File As** dialog box will appear.



2. Type the desired file name in **Save File As** box. The extension of C programs must be .C such as **Test.c**.
3. Enter the path to save file. The default location to save programs is **BIN** directory.
4. Click **OK**. The program will be saved at specified location with specified name.

d. Compiling a C Program

- Select **Compile > Compile** OR press **ALT+F9** key. The program will be compiled. The compiler will generate error message if the program contains any error.

e. Executing a C Program

- Select **Run > Run** OR press **CTRL+F9** key. The program will be executed.

PRACTICAL 2 **Write a program that inputs the name of favorite book and displays it on the screen.**

```
#include <stdio.h>
void main()
{
  char book[50];
  printf("Enter name of your favorite book: ");
  gets(book);
  printf("Your favorite book is: ");
  puts(book);
  getch();
}
```

Output:

```
Enter name of your favorite book: Holy Quran
Your favorite book is: Holy Quran
```

PRACTICAL 3 **Write a program that displays the name of a person and address.**

```
#include <stdio.h>
void main()
{
  char name[ ] = "Usman";
  char address[ ] = "Faisalabad.";
  printf("%s \n", name);
  printf("%s ", address);
  getch();
}
```

Output:

```
Usman
Faisalabad
```

PRACTICAL 4 Write a program to display the following output using single printf statement.

```
*
* *
* * *
* * * *
```

```
#include <stdio.h>
void main()
{
  printf("*\n**\n***\n****");
  getch();
}
```

PRACTICAL 5 Write a program to show following output using one printf statement:

```
1  2   3   4   5
6  7   8   9   10
```

```
#include <stdio.h>
void main()
{
  printf("1 \t 2 \t 3 \t 4 \t 5 \n 6 \t 7 \t 8 \t 9 \t 10");
  getch();
}
```

PRACTICAL 6 Write a program to show following output using one printf statement:

```
Pakistan  is   my   country
Islamabad is   its  capital.
```

```
#include <stdio.h>
void main()
{
  printf(" Pakistan\tis\tmy\tcountry\n Islamabad\tis\tits\tcapital.");
  getch();
}
```

PRACTICAL 7 Write a program to calculate and print the area of rectangle with given length and width.

```
#include <stdio.h>
void main()
{
  int length, width, area;
  clrscr();
  length = 5;
  width = 4;
  area = length * width;
```

Output:
Area of rectangle = 20

```
    printf("Area of rectangle = %d", area);
    getch();
  }
```

PRACTICAL 8 Write a program that gets temperature from the user in Celsius and converts it into Fahrenheit using the formula F = 9/5 * C + 32.

```
#include <stdio.h>
void main()
{
  float cel, faren;
  printf("Enter temperature in celcius:");
  scanf("%f", &cel);
  faren = 9.0 / 5.0 * cel + 32;
  printf("Temperature in Fahrenheit is %.2f", faren);
  getch();
}
```

Output:
Enter temperature in Celsius: 15.50
Temperature in Fahrenheit is 59.90

PRACTICAL 9 Write a program that finds sum, product and average of five numbers.

```
#include <stdio.h>
void main()
{
  int a, b, c, d, e, sum, product;
  float avg;
  printf("Enter 5 numbers:");
  scanf("%d %d %d %d %d", &a, &b, &c, &d, &e);
  sum = a + b + c + d + e;
  product = a * b * c * d * e;
  avg = sum / 5;
  printf("Sum: %d \n", sum);
  printf("Product: %d \n", product);
  printf("Average: %.2f \n", avg);
  getch();
}
```

Output:
Enter 4 numbers: 1 2 3 4 5
Sum: 15
Product: 120
Average: 3.00

PRACTICAL 10 Write a program that inputs radius of sphere and calculates its volume using the formulas vol = $4/3\pi R^3$ where π=3.141.

```
#include <stdio.h>
void main()
{
  float r, vol;
  printf("Enter radius: ");
  scanf("%f", &r);
  vol = (4.0 / 3.0) * 3.141 * r * r * r;
  printf("Volume of sphere: %.2f", vol);
  getch();
}
```

Output:
Enter radius: 5
Volume of sphere: 523.50

PRACTICAL 11 Write a program that finds the acceleration of a moving object with given mass and the force applied using the formulas A = F / M where A is the acceleration and M is the mass.

```
#include <stdio.h>
void main()
{
  float force, mass, acc;
  printf("Enter force: ");
  scanf("%f", &force);
  printf("Enter mass: ");
  scanf("%f", &mass);
  acc = force / mass;
  printf("Acceleration: %.2f", acc);
  getch();
}
```

Output:
Enter force: 18
Enter mass: 5
Acceleration: 3.60

PRACTICAL 12 Write a program that inputs total marks and obtained marks. It finds the percentage of the obtained marks.

```
#include <stdio.h>
void main()
{
  int total, obtained;
  float per;
  printf("Enter total marks: ");
  scanf("%d", &total);
  printf("Enter obtained marks: ");
  scanf("%d", &obtained);
  per = (float)obtained / (float)total * 100;
  printf("Percentage: %.2f %%", per);
  getch();
}
```

Output:
Enter total marks: 800
Enter obtained marks: 735
Percentage: 91.87%

PRACTICAL 13 Write a program that inputs the radius of a cube and finds its volume.

```
#include <stdio.h>
void main()
{
  float s, vol;
  printf("Enter side of the cube: ");
  scanf("%f", &s);
  vol = s * s * s;
  printf("Volume of the cube: %.2f", vol);
  getch();
}
```

Output:
Enter side of the cube: 4
Volume of the cube: 64.00

PRACTICAL 14 Write a program that finds the volume of a cylinder.

```
#include <stdio.h>
void main()
{
  float radius, height, vol;
  printf("Enter the radius of cylinder: ");
  scanf("%f", &radius);
  printf("Enter the height of cylinder: ");
  scanf("%f", &height);
  vol = 3.141 * radius * radius * height;
  printf("The volume of cylinder is %.2f ", vol);
  getch();
}
```

Output:

```
Enter the radius of cylinder: 2
Enter the height of cylinder: 3
The volume of cylinder is 37.69
```

PRACTICAL 15 Write a program that inputs the sides of a triangle and finds its area.

```
#include <stdio.h>
#include <math.h>
void main()
{
  float a, b, c, s, area;
  printf("Enter size of three sides of triangle: ");
  scanf("%f %f %f", &a, &b, &c);
  s = (a + b + c) / 2;
  area = sqrt(s * (s-a) * (s-b) * (s-c));
  printf("The area of triangle %.2f ", area);
  getch();
}
```

Output:

```
Enter size of three sides of triangle: 6 7 8
The area of triangle is 20.33
```

PRACTICAL 16 Write a program that inputs the base and height of a parallelogram and finds its area.

```
#include <stdio.h>
void main()
{
  float base, height, area;
  printf("Enter the base: ");
  scanf("%f ", &base);
  printf("Enter the height: ");
  scanf("%f ", &height);
  area = base * height;
  printf("The area of triangle is %.2f ", area);
  getch();
}
```

Output:

```
Enter the base: 12
Enter the height: 10
The area of parallelogram is 120.0
```

PRACTICAL 17 Write a program that finds the area a rhombus.

```
#include <stdio.h>
void main()
{
  float d1, d2, area;
  printf("Enter length of first diagonal: ");
  scanf("%f ", &d1);
  printf("Enter length of second diagonal: ");
  scanf("%f ", &d2);
  area = (d1 * d2) / 2;
  printf("The area of rhombus is %.2f ", area);
  getch();
}
```

Output:

```
Enter length of first diagonal: 16
Enter length of second diagonal: 12
The area of rhombus is 96.00
```

PRACTICAL 18 Write a program that finds the area of a trapezium.

```
#include <stdio.h>
void main()
{
  float b1, b2, h, area;
  printf("Enter first base of trapezium: ");
  scanf("%f ", &b1);
  printf("Enter second base of trapezium: ");
  scanf("%f ", &b2);
  printf("Enter height of trapezium: ");
  scanf("%f ", &h);
  area = (b1 + b2) / 2 * h;
  printf("The area of trapezium is %.2f ", area);
  getch();
}
```

Output:

```
Enter first base of trapezium: 3
Enter second base of trapezium: 7
Enter height of trapezium: 5
The area of trapezium is 18.00
```

PRACTICAL 19 Write a program that finds the perimeter of a rectangle.

```
#include <stdio.h>
void main()
{
  float length, width, peri;
  printf("Enter the length of rectangle: ");
  scanf("%f ", &length);
  printf("Enter the width of rectangle: ");
  scanf("%f ", &width);
  peri = 2 * (length + width);
  printf("The perimeter of rectangle is %.2f ", peri);
  getch();
}
```

Output:

```
Enter the length of rectangle:5
Enter the width of rectangle: 3
The perimeter of rectangle is 16.00
```

PRACTICAL 20 Write a program that inputs the amount, rate and duration of a loan. It finds the interest on it.

```
#include <stdio.h>
void main()
{
  float amount, rate, dur, interest;
  printf("Enter the amount: ");
  scanf("%f ", &amount);
  printf("Enter the interest rate: ");
  scanf("%f ", &rate);
  printf("Enter the duration in years: ");
  scanf("%f ", &dur);
  interest = (amount * rate * dur) / 100;
  printf("The interest is %.2f ", interest);
  getch();
}
```

Output:

```
Enter the amount: 1000
Enter the interest rate: 5
Enter the duration in years: 5
The interest is 150.00
```

PRACTICAL 21 Write a program that finds the cube of any three numbers.

```
#include <stdio.h>
void main()
{
  int a, b, c;
  printf("Enter three numbers: ");
  scanf("%d %d %d", &a, &b, &c);
  printf("The cube of %d is %d \n", a, a*a*a);
  printf("The cube of %d is %d \n", b, b*b*b);
  printf("The cube of %d is %d ", c, c*c*c);
  getch();
}
```

Output:

```
Enter three numbers: 2 3 4
The cube of 2 is 8
The cube of 3 is 27
The cube of 4 is 64
```

PRACTICAL 22 Write a program that finds the quotient and remainder of two numbers.

```
#include <stdio.h>
void main()
{
  int a, b, q, r;
  printf("Enter dividend: ");
  scanf("%d", &a);
  printf("Enter divisor: ");
  scanf("%d", &b);
  q = a / b;
  r = a % b;
  printf("Quotient: %d \n", q);
  printf("Remainder: %d", r);
  getch();
}
```

Output:

```
Enter dividend: 10
Enter divisor: 3
Quotient: 3
Remainder: 1
```

PRACTICAL 23

Write a program that inputs marks and displays congratulations if the marks are 40 or more.

```
#include <stdio.h>
void main()
{
  int marks;
  printf("Enter your marks: ");
  scanf("%d",&marks);
  if(marks >= 40)
    printf("Congratulations! You have passed.");
  getch();
}
```

Output:

```
Enter your marks: 50
Congratulation! You have passed.
```

PRACTICAL 24

Write a program that inputs two numbers and finds if second number is square of first number.

```
#include <stdio.h>
void main()
{
  int a, b;
  printf("Enter a number: ");
  scanf("%d",&a);
  printf("Enter a number: ");
  scanf("%d",&b);
 if(a * a == b)
    printf("2nd number is square of 1st number.");
  getch();
}
```

Output:

```
Enter a number: 5
Enter a number: 25
2nd number is square of 1st number.
```

PRACTICAL 25

Write a program that inputs a number and finds whether it is even or odd using if-else structure.

```
#include <stdio.h>
void main()
{
  int n;
  printf("Enter a number: ");
  scanf("%d",&n);
  if(n%2 == 0)
    printf("%d is even.",n);
  else
    printf("%d is odd.",n);
  getch();
 }
```

Output:

```
Enter a number: 10
10 is even.
```

PRACTICAL 26 Write a program that inputs two numbers and finds whether these numbers are equal or not using if-else structure.

```
#include <stdio.h>
void main()
{
  int a, b;
  printf("Enter two numbers: ");
  scanf("%d %d",&a, &b);
  if(a == b)
    printf("Numbers are equal.");
  else
    printf("Numbers are different.");
  getch();
}
```

Output:
Enter two numbers: 10 15
Numbers are different.

PRACTICAL 27 Write a program that inputs a number from user and determines whether it is positive, negative or zero.

```
#include < stdio.h>
void main( )
{
  int n;
  printf( " Enter a number");
  scanf("%d", &n);
  if ( n >0)
    printf( " The number is positive");
  else if ( n <0)
    printf( " The number is negative");
  else
    printf( " The number is zero");
  getch();
}
```

Output:
Enter a number: 5
The number is positive

PRACTICAL 28 Write a program that inputs marks of a student and displays his grade according to the given criteria:

Test Score	Grade
>= 80	A
70 – 79	B
60 – 69	C
40 – 59	D
Below 40	Fail

```
#include <stdio.h>
void main()
{
  int marks;
  printf("Enter your marks: ");
  scanf("%d", &marks);
```

```
    if(marks >= 80)
      printf("Your grade is A.");
    else if(marks >= 70)
      printf("Your grade is B.");
    else if(marks >= 60)
      printf("Your grade is C.");
    else if(marks >= 40)
      printf("Your grade is D.");
    else
      printf("You are fail.");
    getch();
}
```

Output:
Enter your marks: 74
Your grade is B.

PRACTICAL 29 **Write a program in C that inputs a number of a month of the year and display the number of days of the corresponding month using if...else...if statement. (e.g. if user enters 2, it will display 28 or 29).**

```
#include <stdio.h>
void main()
{
  int m;
  printf("Enter the month: ");
  scanf("%d", &m);
  if(m==1 || m==3 || m==5 || m==7 || m==8 || m==10 || m==12)
    printf("31 days.");
  else if(m==4 || m==6 || m==9 || m==11)
    printf("30 days.");
  else if(m==2)
    printf("28 or 29 days.");
  else printf("Invalid month.");
}
```

Output:
Enter the month: 9
30 days

PRACTICAL 30 **Write a program that allows the user to enter any character through the keyboard and determines whether it is a capital letter, small case letter, a digit number or a special symbol.**

```
#include <stdio.h>
void main()
{
  char ch;
  printf("Enter any character: ");
  scanf("%c", &ch);
  if ((ch >= 'A') && (ch <= 'Z'))
    printf("The character %c is a capital letter.\n", ch);
  else if ((ch >= 'a') && (ch <= 'z'))
    printf("The character %c is a small case letter.\n", ch);
  else if ((ch >= '0') && (ch <= '9'))
    printf("The character %c is a digit.\n", ch);
  else
    printf("The character %c is a symbol.\n", ch);
```

Output:
Enter any character: #
The character # is a symbol.

```
    getch();
}
```

PRACTICAL 31 **Write a program that solves the quadratic equation.**

```
#include<stdio.h>
#include<math.h>
void main()
{
  int a, b, c, d, e;
  double f, x1, x2;
  printf("Enter value of a: ");
  scanf("%d", &a);
  printf("Enter value of b: ");
  scanf("%d", &b);
  printf("Enter value of c: ");
  scanf("%d", &c);
  d = b * b - 4 * a * c;
  e = 2 * a;
  if (a == 0)
    printf("Not a quadratic equation. A cannot be zero.");
  else if (d < 0)
    printf("Sorry the roots are not real.");
  else
  {
    f = pow(d, 0.5);
    x1 = (-b + f) / e;
    x2 = (-b - f) / e;
    printf("The roots of equation are: %.3f, %.3f", x1, x2);
  }
  getch();
}
```

Output:

```
Enter value of a: 2
Enter value of b: 4
Enter value of c: 1
The roots of equation are: -0.293, -1.707
```

PRACTICAL 32 **Write a program that inputs three numbers and displays the largest number by using logical operators.**

```
#include <stdio.h>
void main()
{
  int a, b, c;
  printf("Enter three numbers: ");
  scanf("%d %d %d", &a, &b, &c);
  if(a>b && a>c)
    printf("Maximum number is %d", a);
  else if(b>a && b>c)
    printf("Maximum number is %d", b);
  else
    printf("Maximum number is %d", c);
  getch();
}
```

Output:

```
Enter three numbers: 10 20 30
Maximum number is 30
```

PRACTICAL 33 Write a program that inputs three numbers and displays the smallest using nested if.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int a, b, c;
  clrscr();
  printf("Enter three number:");
  scanf("%d %d %d", &a, &b, &c);
  if(a<b)
    if(a<c)
          printf("%d is smallest number.", a);
    else
          printf("%d is smallest number.", c);
  else
    if(b<c)
      printf("%d is smallest number.", b);
    else
      printf("%d is smallest number.", c);
   getch();
}
```

Output:
Enter three numbers: 20 35 13
13 is smallest numbers.

PRACTICAL 34 Write a program that inputs three numbers and displays whether all numbers are equal or not by using nested if condition.

```
#include <stdio.h>
void main()
{
  int a, b, c;
  printf("Enter three number:");
  scanf("%d %d %d", &a, &b, &c);
  if(a==b)
    if(a==c)
          printf("All numbers are equal.");
    else
          printf("Numbers are different.");
  else
     printf("Numbers are different.");
   getch();
 }
```

Output:
Enter three numbers: 15 25 30
Numbers are different.

PRACTICAL 35 Write a program that inputs a number of weekdays and displays the name of the day. For example if the user enters 1, it displays "Friday" and so on.

```
#include <stdio.h>
void main()
{
  int n;
  printf("Enter number of a weekday: ");
```

```
    scanf("%d", &n);
    switch(n)
    {
      case 1:
       printf("Friday");
       break;
      case 2:
       printf("Saturday");
       break;
      case 3:
       printf("Sunday");
       break;
      case 4:
       printf("Monday");
       break;
      case 5:
       printf("Tuesday");
       break;
      case 6:
       printf("Wednesday");
       break;
      case 7:
       printf("Thursday");
       break;
      default:
       printf("Invalid number");
    }
    getch();
}
```

Output:

```
Enter number of a weekday: 3
Sunday
```

PRACTICAL 36 **Write a program that inputs a character from user and checks whether it is a vowel or consonant.**

```
#include <stdio.h>
void main()
{
  char c;
  printf("Enter an alphabet: ");
  scanf("%c", &c);
  switch(c)
  {
    case 'a':
    case 'A':
    case 'e':
    case 'E':
    case 'i':
    case 'I':
    case 'o':
    case 'O':
    case 'u':
    case 'U':
```

Output:

```
Enter an alphabet: u
You entered the vowel u
```

```
        printf("You entered the vowel %c", c);
        break;
      default:
        printf("You entered the consonant %c", c);
    }
    getch();
}
```

PRACTICAL 37 **Write a program that inputs two numbers and one arithmetic operator. It applies arithmetic operation on numbers on the basis of operator using switch statement.**

```
#include <stdio.h>
void main()
{
  int a, b;
  char op;
  printf("Enter 1st number, operator and 2nd number:");
  scanf("%d %c %d", &a, &op, &b);
  switch(op)
  {
    case '+':
          printf("%d + %d = %d",a,b,a+b);
          break;
    case '-':
          printf("%d - %d = %d",a,b,a-b);
          break;
    case '*':
          printf("%d * %d = %d",a,b,a*b);
          break;
    case '/':
          printf("%d / %d = %d",a,b,a/b);
          break;
    case '%':
          printf("%d %% %d = %d",a,b,a%b);
          break;
    default:
          printf("Invalid operator!");
  }
  getch();
}
```

Output:

```
Enter 1st number, operator and 2nd number: 3 + 5
3 + 5 = 8
```

PRACTICAL 38 **Write a program that converts Celsius to Fahrenheit temperature and vice versa.**

```
#include <stdio.h>
void main()
{
  float temp, temp2;
  int choice;
  printf("1. Fahrenheit to Centigrade.\n");
  printf("2. Centigrade to Fahrenheit. \n");
```

```
    printf("Enter your choice: ");
    scanf("%d", &choice);
    switch(choice)
    {
      case 1:
        printf("Enter temperature in Fahrenheit: ");
        scanf("%f", &temp);
        temp2 = (temp - 32) * 5.0 / 9.0;
        printf("%f Fahrenheit = %.2f Centigrade", temp, temp2);
        break;
      case 2:
        printf("Enter temperature in Centigrade: ");
        scanf("%f", &temp);
        temp2 = (9.0 / 5.0) * temp + 32;
        printf("%f Centigrade = %f in Fahrenheit", temp, temp2);
        break;
      default:
        printf("Invalid choice.");
    }
    getch();
}
```

Output:

```
1. Fahrenheit to Centigrade.
2. Centigrade to Fahrenheit.
Enter your choice: 1
Enter temperature in Fahrenheit: 35
35 Fahrenheit = 1.67 Centigrade
```

PRACTICAL 39 **Write a program that finds the volume of a cube, cylinder or sphere based on the user choice.**

```
#include <stdio.h>
void main()
{
  float side, radius, height, vol;
  int choice;
  printf("1. Cube \t 2. Cylinder \t 3. Sphere \n");
  printf("Enter your choice: ");
  scanf("%d", &choice);
  switch(choice)
  {
    case 1:
      printf("Enter the side of the cube: ");
      scanf("%f", &side);
      vol = side * side * side;
      printf("The volume of the cube is %f ", vol);
      break;
    case 2:
      printf("Enter the radius and height of the cylinder: ");
      scanf("%f %f", &radius, &height);
      vol = 3.141 * radius * radius * height;
      printf("The volume of the cylinder is %f ", vol);
      break;
    case 3:
      printf("Enter the radius of the sphere: ");
      scanf("%f", &radius);
      vol = (4.0/3.0) * 3.141 * radius * radius * radius;
```

Output:

```
1. Cube      2. Cylinder      3. Sphere
Enter your choice: 1
Enter the side of the cube: 4
The volume of the cube is 64.000000
```

```
        printf("The volume of the sphere is %f", vol);
        break;
      default
        printf("Invalid choice");
    }
    getch();
}
```

PRACTICAL 40 Write a program that converts kilograms to pounds and vice versa.

```
#include <stdio.h>
void main()
{
  float kilo, pound;
  int choice;
  printf("1. Kilogram to Pound \n");
  printf("2. Pound to Kilogram \n");
  printf("Enter your choice: ");
  scanf("%d", &choice);
  switch(choice)
  {
    case 1:
      printf("Enter weight in kilograms: ");
      scanf("%f", &kilo);
      pound = kilo * 2.20462;
      printf("%f kilograms = %f pounds", kilo, pound);
      break;
    case 2:
      printf("Enter weight in pounds: ");
      scanf("%f", &pound);
      kilo = pound * 0.45359;
      printf("%f pounds = %f kilo", pound, kilo);
      break;
    default:
      printf("Invalid choice.");
  }
  getch();
}
```

Output:

```
1. Kilogram to Pound
2. Pound to Kilogram
Enter your choice: 1
Enter weight in kilograms: 2.5
2.50 kilograms = 5.51 pounds
```

PRACTICAL 41 Write a program that inputs two numbers and displays which number is larger using conditional operator.

```
#include <stdio.h>
void main()
{
  int x, y;
  printf("Enter two numbers:");
  scanf("%d %d", &x, &y);
  x > y ? printf("%d is larger", x) : printf("%d is larger", y);
  getch();
}
```

Output:

```
Enter two numbers: 12 50
50 is larger
```

PRACTICAL 42 Write a program that inputs a number and displays whether it is divisible by 3 or not by using conditional operator.

```
#include <stdio.h>
void main()
{
  int n;
  printf("Enter number:");
  scanf("%d", &n);
  (n%3==0 ? printf("Divisible by 3") : printf("Not divisible by 3"));
  getch();
}
```

Output:

```
Enter number: 15
Divisible by 3
```

PRACTICAL 43 Write a program that displays "Pakistan" for five times using while loop.

```
#include <stdio.h>
void main()
{
  int n;
  n = 1;
  while(n<=5)
  {
    printf("Pakistan\n");
    n++;
  }
  getch();
}
```

Output:

```
Pakistan
Pakistan
Pakistan
Pakistan
Pakistan
```

PRACTICAL 44 Write a program that displays counting from 1 to 5 using while loop.

```
#include <stdio.h>
void main()
{
  int n;
  n = 1;
  while(n <= 5)
  {
    printf("%d \n",n);
    n++;
  }
  getch();
}
```

Output:

```
1
2
3
4
5
```

PRACTICAL 45 Write a program that displays first five numbers and their sum using while loop.

```
#include <stdio.h>
void main()
{
  int c, sum;
  c = 1;
```

```
  sum = 0;
  while(c <= 5)
  {
    printf("%d \n",c);
    sum = sum + c;
    c = c + 1;
  }
  printf("Sum is %d",sum);
  getch();
}
```

Output:

```
1
2
3
4
5
Sum is: 15
```

PRACTICAL 46 Write a program that inputs starting and ending number from the user and then displays all even numbers in the given range.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int n, s, e;
  clrscr();
  printf("Enter starting number: ");
  scanf("%d",&s);
  printf("Enter ending number: ");
  scanf("%d",&e);
  n = s;
  while(n<=e)
  {
    if(n%2==0)
      printf("%d \n", n);
    n++;
  }
  getch();
}
```

Output:

```
Enter starting number: 1
Enter ending number: 10
2
4
6
8
10
```

PRACTICAL 47 Write a program that inputs a number from the user and displays a table of that number using while loop.

```
#include <stdio.h>
void main()
{
  int n, c;
  c = 1;
  printf("Enter a number: ");
  scanf("%d",&n);
  while(c <= 10)
  {
    printf("%d * %d = %d \n",n,c,n*c);
    c = c + 1;
  }
  getch();
}
```

Output:

```
Enter a number: 3
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
```

PRACTICAL 48 Write a program that produces the following output:

```
0    1
1    2
2    4
3    8
4    16
5    32
6    64
```

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int i, j;
  clrscr();
  i = 0;
  j = 1;
  while(i<=6)
  {
    printf("%d   %d\n",i,j);
    i = i + 1;
    j = j * 2;
  }
  getch();
}
```

PRACTICAL 49 Write a program that inputs a number from the user and displays the factorial of that number using while loop.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int n, c, f;
  clrscr();
  c = 1;
  f = 1;
  printf("Enter a number: ");
  scanf("%d",&n);
  while(c <= n)
  {
    f = f * c;
    c = c + 1;
  }
  printf("Factorial of %d is %d",n,f);
  getch();
}
```

Output:

```
Enter a number: 3
Factorial of 3 is 6
```

PRACTICAL 50 Write a program to add all the numbers entered by a user until the enters 0.

```
#include <stdio.h>
void main()
{
  int n, sum;
  sum = 0;
  do
  {
    printf("Enter a number (0 to exit): ");
    scanf("%d", &n);
    sum = sum + n;
  }
  while(n != 0);
  printf("The sum is %d", sum);
  getch();
}
```

Output:

```
Enter number (0 to exit): 5
Enter number (0 to exit): 3
Enter number (0 to exit): 1
Enter number (0 to exit): 0
The sum is 9
```

PRACTICAL 51 Write a program that displays back-counting from 10 to 1 using do-while loop.

```
#include <stdio.h>
void main()
{
  int c;
  c = 10;
  do
  {
    printf("%d \n",c);
    c = c – 1;
  }
  while(c>=1);
  getch();
}
```

Output:

```
10
9
8
7
6
5
4
3
2
1
```

PRACTICAL 52 Write a program that displays first ten odd numbers using do-while loop.

```
#include <stdio.h>
void main()
{
  int c;
  c = 1;
  do
  {
    if(c%2 != 0)
      printf("%d \n",c);
    c = c + 1;
  }
  while(c<=20);
  getch();
}
```

Output:

```
1
3
5
7
9
11
13
15
17
19
```

PRACTICAL 53 Write a program that inputs a number from the user and displays the factorial of that number using do-while loop.

```
#include <stdio.h>
void main()
{
  int c, num, f;
  c = 1;
  f = 1;
  printf("Enter a number: ");
  scanf("%d",&num);
  do
  {
    f = f * c;
    c = c + 1;
  }
  while(c<=num);
  printf("Factorial of %d is %d",num,f);
  getch();
}
```

Output:

```
Enter a number: 5
Factorial of 5 is 120
```

PRACTICAL 54 Write a program that inputs a number from the user and displays the table of that number using do-while loop.

```
#include <stdio.h>
void main()
{
  int n, c;
  c = 1;
  printf("Enter a number: ");
  scanf("%d",&n);
  do
  {
    printf("%d * %d = %d \n",n,c,n*c);
    c = c + 1;
  }
  while(c <= 10);
  getch();
}
```

Output:

```
Enter a number: 2
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

PRACTICAL 55 Write a program that displays first five numbers with their cubes using do-while loop.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int c;
  clrscr();
  c = 1;
```

```
    do
    {
      printf("%d \t %d \n",c,c*c*c);
      c = c + 1;
    }
    while(c<=5);
    getch();
}
```

Output:

```
1       1
2       8
3       27
4       64
5       125
```

PRACTICAL 56

Write a program that gets starting and ending point from the user and displays all odd numbers in the given range using do-while loop.

```
#include <stdio.h>
void main()
{
  int c, s, e;
  printf("Enter starting number: ");
  scanf("%d",&s);
  printf("Enter ending number: ");
  scanf("%d",&e);
  c = s;
  do
  {
    if(c%2!=0)
      printf("%d \n",c);
    c = c + 1;
  }
  while(c<=e);
  getch();
}
```

Output:

```
Enter starting number: 5
Enter ending number: 15
5
7
9
11
13
15
```

PRACTICAL 57

Write a program to find the exponent of a given number.

```
#include <stdio.h>
void main()
{
  int base, exp, c, r;
  printf("Enter the base number: ");
  scanf("%d",&base);
  printf("Enter the exponent: ");
  scanf("%d",&exp);
  c = 1;
  r = 1;
  do
  {
    r = r * base;
    c = c + 1;
  }
  while(c <= exp);
  printf("Result is %d", r);
  getch();
}
```

Output:

```
Enter the base number: 2
Enter the exponent: 3
Result is 8
```

PRACTICAL 58 Write a program that finds the least common multiple (LCM) of three given numbers.

```
#include<stdio.h>
#include<conio.h>
void main()
{
  int x, y, z, max, lcm;
  printf("Enter three numbers: ");
  scanf("%d%d%d", &x, &y, &z);
  if(x>=y && x>=z)
    max=x;
  else if(y>=x && y>=z)
    max=y;
  else if(z>=x && z>=y)
    max=z;
  do
  {
    if(max%x==0 && max%y==0 && max%z==0)
    {
      lcm = max;
      break;
    }
    else
      max++;
  } while (1);
  printf("LCM: %d", lcm);
  getch();
}
```

Output:

```
Enter three numbers: 2 4 6
LCM: 12
```

PRACTICAL 59 Write a program that displays counting from 1 to 5 using for loop.

```
#include <stdio.h>
void main()
{
  int n;
  for(n=1; n<=5; n++)
      printf("%d \n",n);
  getch();
}
```

Output:

```
1
2
3
4
5
```

PRACTICAL 60 Write a program to display alphabets from A to Z using for loop.

```
#include <stdio.h>
void main()
{
  char ch;
  for(ch='A'; ch<='Z'; ch++)
    printf("%c ", ch);
  getch();
}
```

Output:

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

PRACTICAL 61 Write a program that finds sum of first n natural numbers where n is entered by user.

```
#include <stdio.h>
void main()
{
  int i, s, n;
  printf("Enter a number: ");
  scanf("%d", &n);
  s = 0;
  for(i=1; i<=n; i++)
    s = s + i;
  printf("Sum of first %d numbers = %d", n, s);
  getch();
}
```

Output:
Enter a number: 5
Sum of first 5 numbers = 15

PRACTICAL 62 Write a program that displays first ten numbers and their average using for loop.

```
#include <stdio.h>
void main()
{
  int i, s;
  float avg;
  s = 0;
  for(i=1; i<=10; i++)
  {
    printf("%d\n", i);
    s = s + i;
  }
  avg = s / 10.0;
  printf("Average: %.2f", avg);
  getch();
}
```

Output:
1
2
3
...
10
Average: 5.50

PRACTICAL 63 Write a program to print the sum of odd numbers between 1 and 100.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int c, sum;
  clrscr();
  sum = 0;
  for(c=1; c<100; c=c+2)
    sum = sum + c;
  printf("Sum = %d ", sum);
  getch();
}
```

Output:
Sum = 2500

PRACTICAL 64 Write a program that displays the series: 1 4 7 10 ... 40

```
#include< stdio.h>
void main()
{
  int i;
  for(i=1;i<=40;i+=3)
    printf("%d", i);
  getch();
}
```

Output:
1 4 7 10 13 16 19 22 25 28 31 34 37 40

PRACTICAL 65 Write a program that displays the sum of positive odd numbers and the product of positive even numbers from 1 to 10.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int n, sum, pro;
  sum = 0;
  pro = 1;
  for(n=1; n<=10; n++)
  {
    if(n%2==0)
      pro = pro * n;
    else
      sum = sum + n;
  }
  printf("Sum of positive odd numbers: %d\n", sum);
  printf("Product of positive even numbers: %d", pro);
  getch();
}
```

Output:
Sum of positive odd numbers: 25
Product of positive even numbers: 3840

PRACTICAL 66 Write a program to displays a table of equivalent temperatures in Fahrenheit and Celsius from 50F to 100F with an increment of 5.

```
#include <stdio.h>
void main()
{
  int f;
  float c;
  printf("Fahrenheit \t Celsius \n");
  for(f=50; f<=100; f=f+5)
  {
    c = 5.0/9.0 * (f – 32);
    printf("%3d \t %6.2f \n", f, c);
  }
  getch();
}
```

Output:

Fahrenheit	Celsius
50	10.00
55	12.78
60	15.56
65	18.33
70	21.11
75	23.89
80	26.67
85	29.44
90	32.22
95	35.00
100	37.78

PRACTICAL 67 Write a program that displays product of all odd numbers from 1 to 10 using for loop.

```
#include <stdio.h>
void main()
{
  long int product;
  int c;
  product = 1;
  for(c=1; c<=10; c=c+2)
     product *= c;
  printf("Result is %d",product);
  getch();
}
```

Output:
Result is: 945

PRACTICAL 68 Write a program that finds the sum of the squares of the integers from 1 to n. Where n is a positive value entered by the user (i.e. Sum = $1^2 + 2^2 + 3^2 + \ldots\ldots + n^2$).

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int n, c;
  long int sum;
  sum = 0;
  printf("Enter a number: ");
  scanf("%d",&n);
  for(c=1; c<=n; c++)
     sum = sum + (c * c);
  printf("Sum is %d \n",sum);
  getch();
}
```

Output:
Enter a number: 5
Sum of squares: 55

PRACTICAL 69 Write a program that inputs a number from the user and displays the factorial of that number using for loop.

```
#include <stdio.h>
#include <conio.h>
void main()
{
   int n, c, f;
   f = 1;
   printf("Enter a number: ");
   scanf("%d",&n);
   for(c=1; c<=n; c++)
      f = f * c;
   printf("Factorial of %d is %d",n,f);
   getch();
}
```

Output:
Enter a number: 5
Factorial of 5 is 120

PRACTICAL 70 Write a program that inputs a number from the user and displays a table of that number using for loop.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int tab, c;
  clrscr();
  printf("Enter number for table: ");
  scanf("%d",&tab);
  for(c=1; c<=10; c++)
    printf("%d * %d = %d \n", tab, c, tab*c);
  getch();
}
```

Output:

```
Enter number for table: 2
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
...
2 * 10 = 20
```

PRACTICAL 71 Write a program that inputs the table number and length of table and then displays the table using for loop.

```
#include <stdio.h>
void main()
{
  int tab, len, c;
  printf("Enter number for table: ");
  scanf("%d",&tab);
  printf("Enter length of table: ");
  scanf("%d",&len);
  for(c=1; c<=len; c++)
    printf("%d * %d = %d \n", tab, c, tab*c);
  getch();
}
```

Output:

```
Enter number for table: 2
Enter number for table: 8
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
```

PRACTICAL 72 Write a program that inputs a positive integer number from the user and displays it in reverse order.

```
#include <stdio.h>
void main()
{
  int x, t, r;
  printf("Enter an integer: ");
  scanf("%d",&x);
  r = 0;
  for(t=x; t!=0; t=t/10)
    r = 10 * r + t % 10;
  printf("Actual number is %d \n", x);
  printf("Reverse number is %d", r);
  getch();
}
```

Output:

```
Enter an integer: 1234
Actual number is 1234
Reverse number is 4321
```

PRACTICAL 73 Write a program that determines if the given number is prime or not.

```
#include <stdio.h>
void main()
{
  int c, num, p = 1;
  printf("Enter an integer: ");
  scanf("%d", &num);
  for(c=2; c<=num/2; c++)
    if(num%c==0)
    {
      p = 0;
      break;
    }
  if(p==1)
    printf("%d is a prime number", num);
  else
    printf("%d is not a prime number", num);
  getch();
}
```

Output:
Enter an integer: 97
97 is a prime number.

PRACTICAL 74 Write a program that determines if the given number is composite number or not.

```
#include <stdio.h>
void main()
{
  int c, num, p = 1;
  printf("Enter an integer: ");
  scanf("%d", &num);
  for(c=2; c<=num/2; c++)
    if(num%c==0)
    {
      p = 0;
      break;
    }
  if(p==0)
    printf("%d is a composite number", num);
  else
    printf("%d is not a composite number", num);
  getch();
}
```

Output:
Enter an integer: 30
30 is a composite number.

PRACTICAL 75 Write a program that determines the prime integers ranging from n1 to n2 using for loop.

```
#include <stdio.h>
void main()
{
  int n1, n2, c, num, p;
```

```
printf("Enter starting integer: ");
scanf("%d", &n1);
printf("Enter ending integer: ");
scanf("%d", &n2);
printf("Prime numbers between %d and %d: \n", n1, n2);
for(num=n1; num<=n2; num++)
{
  p = 1;
  for(c=2; c<=num/2; c++)
  if(num%c==0)
  {
   p = 0;
   break;
  }
  if(p==1)
   printf("%d \t", num);
}
getch();
}
```

Output:

```
Enter starting integer: 10
Enter ending integer: 20
Prime numbers between 10 and 20:
11      13      17      19
```

PRACTICAL 76 Write a program that determines the factors of a number using for loop.

```
#include <stdio.h>
void main()
{
  int i, num;
  printf("Enter a number: ");
  scanf("%d", &num);
  printf("Factors of %d are as follows: \n", num);
  for (i=1; i<=num; i++)
   if(num%i == 0)
     printf("%d \t", i);
  getch();
}
```

Output:

```
Enter a number: 10
Factors of 10 are as follows:
1       2       5       10
```

PRACTICAL 77 Write a program that shows the multiples of a given number between two numbers.

```
#include<stdio.h>
void main()
{
  int num, start, end, c;
  printf("Enter the number: ");
  scanf("%d", &num);
  printf("Enter starting number: ");
  scanf("%d", &start);
  printf("Enter ending number: ");
  scanf("%d", &end);
  printf("Multiples of %d between %d and %d \n", num, start, end);
  for(c=start; c<=end; c++)
    if(c%num == 0)
      printf("%d \t", c);
```

Output:

```
Enter the number: 3
Enter starting number: 10
Enter ending number: 25
Multiples of 3 between 10 and 25:
12      15      18      21      24
```

```
    getch();
}
```

PRACTICAL 78

Write a program that finds the greatest common divisor (GCD) of three given numbers.

```
#include<stdio.h>
void main()
{
  int a, b, c, gcd, i;
  printf("Enter three numbers: ");
  scanf("%d %d %d", &a, &b, &c);
  for(i=1; i<=a && i<=b && i<=c; i++)
    if(a%i==0 && b%i==0 && c%i==0)
      gcd = i;
  printf("GCD: %d", gcd);
  getch();
}
```

Output:

```
Enter three numbers: 20 25 30
GCD: 5
```

PRACTICAL 79

Write a program that inputs a number from the user. It displays the number if it is greater than 0 otherwise it inputs next number without displaying the number using continue statement.

```
#include <stdio.h>
void main()
{
  int x, num;
  for(x=1; x<=5; x++)
  {
    printf("Enter a number: ");
    scanf("%d",&num);
    if(num<=0)
      continue;
    printf("You entered %d\n",num);
  }
  getch();
}
```

Output:

```
Enter a number: 5
You entered 5
Enter a number: -1
Enter a number: 0
Enter a number: -5
Enter a number: 100
You entered 100
```

PRACTICAL 80

Write a program that inputs a number and from the user. It displays the number if it is greater than 0 and inputs the next number. The program uses 'break' statement to exit the loop if the number is 0 or negative.

```
#include <stdio.h>
void main()
{
  int x, num;
  for(x=1; x<=5; x++)
  {
    printf("Enter a number: ");
    scanf("%d",&num);
```

Output:

```
Enter a number: 5
You entered 5
Enter a number: 10
You entered: 10
Enter a number: -5
```

```
    if(num<=0)
      break;
    printf("You entered %d\n",num);
  }
  getch();
}
```

PRACTICAL 81 Write a program that inputs an integer from the user. It displays the integer and its factorial from 1 to the given integer.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int num, m, n;
  long int f;
  printf("Enter the ending integer: ");
  scanf("%d", &num);
  printf("\nInteger \t Factorial \n");
  for(m=1; m<=num; m++)
  {
    f = 1;
    for(n=1; n<=m; n++)
      f = f * n;
    printf("%3d \t\t %6ld \n", m, f);
  }
  getch();
}
```

Output:

```
Enter the ending integer: 8
Integer          Factorial
  1                  1
  2                  2
  3                  6
  4                 24
  5                120
  6                720
  7               5040
  8              40320
```

PRACTICAL 82 Write a program to produce the following output:

```
0
0   1
0   1   4
0   1   4   9
0   1   4   9   16
0   1   4   9   16   25
```

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int i, j;
  for(i=0; i<=5; i++)
  {
    for(j=0; j<=i; j++)
      printf("%d\t", j*j);
    printf("\n");
  }
  getch();
}
```

PRACTICAL 83 Write a program that displays the following block using nested for loop.

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int m, n;
  clrscr();
  for(m=1; m<=5; m++)
  {
    for(n=1; n<=5; n++)
      printf("*");
    printf("\n");
  }
  getch();
}
```

VIVA VOCE

Q. What is programming language?

A set of words and symbols used to write programs is called programming language. The programming languages are used to write computer programs. A programming language is a means of communication between a user and computer.

Q. Why does machine language program execute faster?

A program written in machine language can be executed very fast by computer. The computer does not need any translator to understand this language.

Q. Define low level language.

A language that is close to hardware and far from human language is called low level language.

Q. What is assembly language?

Assembly language is a low-level language. It is one step higher than machine language. In assembly language, machine instructions are replaced with English-like words known as mnemonics.

Q. What is high level language?

A type of language that is close to human languages is called high level language. The instructions in these languages are similar to English language such as input and print etc. These languages are easy to understand.

Q. Write the names of five high-level languages.

The five examples of high-level languages are C, C++, Java, C# and Visual Basic.

Q. Define source code.

A program written in a high level language is called source code. It is also called source program

Q. Why the source code cannot be executed directly?

The source code cannot be executed by computer directly because the computer does not understand it. It is converted into machine code and then executed.

Q. Define object code.

A program in machine language is called object code. It is also called object program. Computer understands object code directly.

Q. Why is a language translator needed?

A language translator is needed to convert high-level programs into machine language. A program written in high-level or assembly language cannot be run on a computer directly. It must be converted into machine language using language translator before execution.

Q. List three types of language translators.

The three types of translators include compiler, interpreter and assembler.

Q. Differentiate between a compiler and interpreter.

The compiler converts the instruction of a high level language into machine language as a whole. An interpreter converts one instruction of the program and executes it before translating the next instruction. The compiler generates object code but interpreter does not generate any object code.

Q. What is IDE? Give some examples of IDEs.

A set of tools used to write, edit, save, compile and execute the programs is known as Integrated Development Environment (IDE). Some examples of IDEs are Visual Studio, JBuilder, Delphi and Eclipse.

Q. What is the use of Turbo C++?

The compiler used for C language is Turbo C++. It is the implementation of Borland International for C language. It is used to create, edit and save programs. It also provides a powerful debugger. The debugger helps users in detecting and removing errors in programs.

Q. Name different modules of C programming environment.

Different modules of C programming environment include editor, compiler, linker, loader and debugger.

Q. What is the purpose of linker in C language?

The purpose of linker in C language is to link the library files with the object program. It generates an error message if the library file does not exist.

Q. Which kind of file is produced when a C program with no syntax error is compiled?

An object file with extension obj is produced when a C program with no syntax error is compiled.

Q. Write the shortcut key to compile C program.

The shortcut key to compile C program is ALT+F9.

Q. Write the shortcut key to run C program.

The shortcut key to run C program is CTRL+F9.

Q. Write the shortcut key to view output screen in Turbo C++ IDE.

The shortcut key to view output screen in Turbo C++ IDE is ALT+F5.

Q. Write the name of header file that must be included in program to use the functions printf and scanf?

The header file stdio.h must be included in the program to use the functions print and scanf. This header file contains the definitions of these functions for input and output.

Q. C is a case sensitive language. What does it mean?

It means that C language can differentiate between uppercase and lowercase words. All keywords are usually written in lowercase.

Q. How is a header file included in a C program?

The preprocessor directive include is used to add a header file in the program. The name of the file is written in angle brackets < > after #include directive.

Q. Name and give the purpose of basic data type available in C.

int are used to store whole numbers (integers). float is used to store a real or floating point value. A char stores a single character including letters, punctuation marks and digits.

Q. Why is it important to assign a data type to a variable?

Every data type has a range of values and requires different amount of memory. It is important to specify correct data types for the variables in a program so that data can be stored correctly.

Q. Differentiate between float and double data type.

The difference between float and double data types is that float takes 4 bytes and double takes 8 bytes in memory. The float variable provides a precision of 6 digits. The double variable provides a precision of 14 digits.

Q. What is constant qualifier? Give example.

Constant qualifier is used to define a constant. The constant is declared by specifying its name and data type. An example of constant qualifier is cons tint N = 100;

Q. What is type casting?

The process of converting a value from one data type to another data type is known as type casting. The type casting is performed by using cast operator.

Q. What is the purpose of comment? Where can you add the comments in programs?

Comments are used to provide additional useful information inside C program. They are inserted to explain the purpose of the code. Comments can be added anywhere in the code. Comments can be added in programs in two ways. The user can write comments on single line or on multiple lines.

Q. List some important functions for input.

Some important functions for input include scanf(),gets(),getch() and getche().

Q. List the names of three functions used for character input.

Three functions used for character input are scanf(), getch() and getche().

Q. What action scanf() function performs?

The scanf function is used to get input from the user. The input is stored in a variable.

Q. Why is the ampersand (&) used in scanf function?

The ampersand (&) refers to the memory location of the variable in which the input is stored. It is placed before variable name. It is also called address operator.

Q. What is use of format specifiers in C language?

Format specifier is used to specify the format according to which values will be read and displayed. It determines the data type of variable and format of the value.

Q. Which symbol is used to start format specifiers?

Format specifiers are started with the symbol %.

Q. List three types of format specifiers?

Three types of format specifiers are integer format specifier, character format specifier and floating-point format specifier.

Q. List five format specifiers for integer values.

Five format specifiers for integer values are %d, %i, %o, %u, and %x.

Q. List three format specifiers for floating-point values.

Three format specifiers for floating-point values %f, %e and %g.

Q. List the format specifiers for character values.

The format specifiers for character values are %c and %s.

Q. Write the purpose of %c format specifier.

The format specifier %c is used for single character values.

Q. What is the purpose of %d format specifier?

The format specifier %d is used for signed decimal integer value.

Q. What are escape sequences?

Escape sequences are special characters used in format string to modify the format of output. These characters are not displayed in the output. These characters always begin with backslash "\".

Q. Name six escape character provided by C.

Six escape sequences used in C language are \a, \b, \f, \n, \r and \t.

Q. What is the function of \n escape sequence?

The \n escape sequence is used to insert new line in output.

Q. Write the purpose of using \t escape sequence?

The \t escape sequence is used to insert a TAB in the output.

Q. What is the use of "getch" function?

The getch( ) function is used to input single character from user. When it is executed, the character entered by user is not displayed on screen.

Q. List different types of operators in C.

Different types of operators in C are arithmetic, relational, logical, assignment, increment, decrement and compound assignment operators.

Q. Define arithmetic operator and list different arithmetical operators in C.

Arithmetic operator is a symbol that performs mathematical operation on data. C language provides many arithmetic operators. These are + , -, *, / and %.

Q. What is arithmetic expression?

A type of expression in which only arithmetic operators are used is called arithmetic expression. An arithmetic expression may contain integers and floating point numbers.

Q. What is the use of assignment operator?

The assignment operator is used to store a value or computational result in a variable. The symbol = is used to represent the assignment operator.

Q. What does the symbol = do in C?

The symbol = is called assignment operator. It is used to assign values to variables in C.

Q. Differentiate between unary and binary operators.

The unary operators work with one operand such as ++x. The binary operators work with two operands such as x + y.

Q. What is relational operator?

The relational operators are used to compare values in programs. A relational operator compares two values and produces result as true or false.

Q. List six relational operators in C language.

The six relational operators in C language are >, <, ==, >=, <=, and !=.

Q. Differentiate between assignment operator (=) and equal to operator (==).

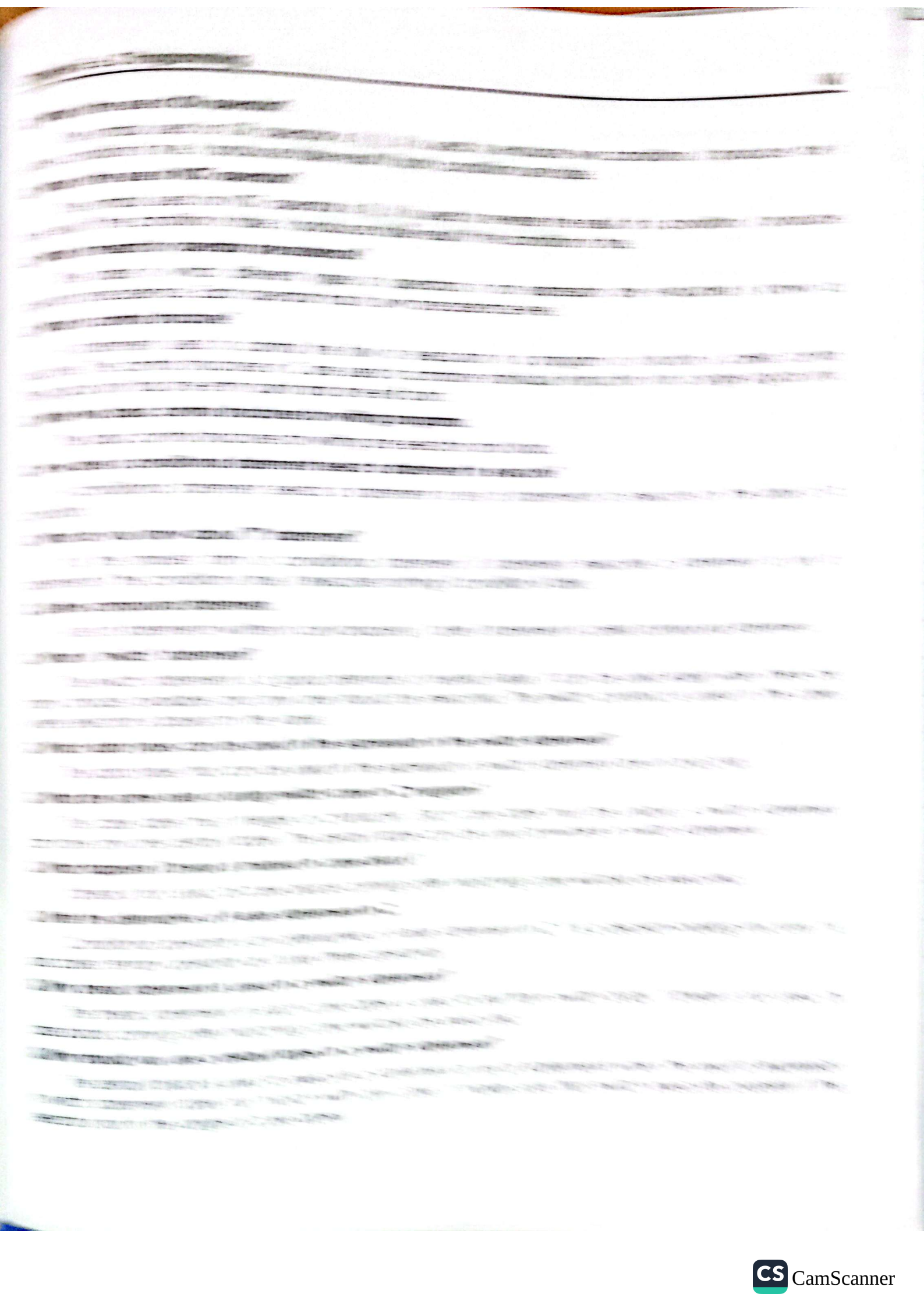
The symbol = is an assignment operator that assigns a value to a variable. The symbol == is a relational operator that checks if two values are equal or not.

Q. Which operators are used to evaluate compound condition?

Logical operators are used to evaluate compound conditions. The logical operators in C language are AND operator (&&), OR operator (| |) and NOT operator (!).

Q. What is the use of AND operator?

The symbol used for AND operator is (&&). It is used to evaluate two conditions. It produces true if both conditions are true. It produces false result if any one condition is false.



2. What is conditional statement?

Conditional statement is a decision-making structure. It uses the result in either of two ways. The program flow will change depending on the result of the conditional statement.

2. Define loop structure.

A type of control structure that executes a statement or set of statements repeatedly is called loop structure.

2. What are two uses of initialization of loop?

Loop can used to execute a statement or number of statements for a specified number of times. Loop can used to access elements of vector.

2. What 2 statements are used to create iteration?

The 2 statements used to create iteration are while loop, do-while loop and for loop.

2. Which part of the loop contains the statements to be executed?

The loop body is the part of the loop that contains the statements to be executed.

2. Which three steps must be done using loop control variable?

The three steps that must be done using the loop control variable are initialization, test and increment/decrement.

2. Define the while loop in C programming.

'while' loop is the simplest loop of C language. It executes one or more statements while the given condition remains true.

2. What do you know about do-while loop?

The do-while is an iterative control in C language. It executes one or more statements while the given condition is true. In this loop, the condition comes after the body of the loop. The loop is executed if a situation where a statement must be executed at least once.

2. Differentiate between while and do-while loops.

In while loop, condition comes before the body of the loop. In do-while loop, condition comes after the body of the loop. If condition is false in the beginning, while loop is never executed, do-while is executed at least once even if condition is false in the beginning.

2. What is "for" loop?

'for' loop executes one or more statements for a specified number of times. This loop is also called counter-controlled loop. It is the most flexible loop. That is why the most programmers use this loop in programs.

2. What is nested loop?

A loop within a loop is called nested loop.

2. Distinguish between break and continue statements used in loops.

When the break statement is executed in a loop, it terminates the loop. When continue statement is executed in a loop, it terminates the current iteration of the loop and the execution moves to the next iteration of the loop.

2. Define infinite loop.

A loop in which the ending condition never occurs is called infinite loop. It repeats forever until the user interrupts to stop the loop.