Basic C Programs & operators

1. C Hello World Program
2. C Program to Print a Integer Entered by a User
3. C Program to Add Two Integers
4. C Program to Find ASCII Value of a Character
5. C Program to Find Quotient and Remainder of Two Integers Entered by User
6. C Program to Swap Two Numbers
7. Predict the Output and analyze it:

1)
```
void main() // scope of variable
{
        int x=2;
        {
                int x=1;
                printf("%d",x);
        }
        printf("%d",x);
}
```

2)
```
main() // increment operations
{
        int i=-1,j=-1,k=0,l=2,m;
        m = i++ && j++ && k++ || l++;
        printf("%d %d %d %d %d",i,j, k,l,m);
}
```

3)
```
main()// decrement operations
{
        int c=2;
        printf("c=%d",--c);
}
```

4)
```
main()// bitwise operators
{
        int i=10;
        i=!i>14;
        Printf ("i=%d",i);
}
```

5)
```
main()// character notations
{
        printf("\nab");
        printf("\bsi");
        printf("\rha");
```

```
}
```

6)
```
main()// increment & decrement operators
{
        int i=5;
        printf("%d%d%d%d%d",i++,i--,++i,--i,i);
}
```

7)
```
main() // operators in c
{
        int a,b,c,d;
        a=15;
        b=10;
        c=++a-b;
        printf("a=%d   b=%d   c=%d \n",a,b,c);
        d=b++ +a;
        printf("a=%d   b=%d   d=%d\n"a,b,d);
}
```

8)
```
main() //input/output operations n format specifiers
{
        int i;
        i=2345;
        printf("%d\n",i);
        printf("%10d\n",i);
        printf("%010d\n",i);
}
```

9)
```
main() // experssions
{
        int x;
        x = -3+4-7*8/5%10;
        printf("X= %d",x);
}
```

10)
```
main() // experssions
{
        float a=1.5;
        int b=3;
        a = b/2+b*8/b-b+a/3;
        printf("a=%f",a);
}
```

11)
```
main() //bitwise operators
{
        int x=10,y=5,p,q;
        p = x > 9;
        q = x > 3 && y ! = 3;
        printf("p=%d q=%d",p,q);
}
```

12)
```
main() //bitwise operators
{
        int a=30,b=40,x;
        x=(a!=10)&&(b==50);
        printf("x=%d",x);
}
```

13)
```
main() // expressions
{
        int x=3;
        x*=x+4;
        printf("x=%d",x);
}
```

14)
```
main() // decrement operators
{
        int x=3,z;
        z = x---11;
        printf("x = %d z = %d",x,z);
}
```

15)
```
main() // increment operations
{
        int x=3,z, j=3,k;
        z = x++ + ++x;
        k = ++j*++j*++j;
        printf("j=%d k=%d",j,k);
}
```

16)
```
main() // arithmetic operators
{
        int x=10,y,z,a,b,c;
        z = y = x;
        y- = x--;
        z- = --x;
        x- = --x-x--;
        printf("y = %d z = %d x = %d ",y,z,x);
        a = b = c = -1;
        c = ++a&&++b||++c;
        printf("a=%d b = %d c = %d\n",a,b,c);
}
```

17)
```
main() // logical operators
{
        int i=-32,j=65,k;
        k=j^32;
        printf("k=%d\n",k);
        k=j<<2;
```

```
        printf("k=%d\n",k);
        k=i>>5;
        printf("k=%d\n",k);
    }
```

18)
```
main() // assignment operators
{
    int a = b = c = d = 30;
    printf("%d %d %d %d",a,b,c,d);
}
```

8. Write a program to solve the expression Y=m*x+b // arithmetic expressions
9. Assume x=5 and y=2 compute the following expressions

   x && y

   x & y

   x || y

   x | y is true or false

10. Program to calculate area of a circle
11. Check the values for x

    (x < 5) ? y = 1: y = 0

12. Program to find the larger of two numbers using ternary operator
13. Program to find the Simple Interest
14. Program to find sum of 5 subjects and find percentage
15. Program to swap numbers without using third variable

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Control Structure

1. Predict the Output and analyze it:

1) main() //control statements : Decision Structures
{
int a=300,b=0,c;
if(a>=400)
b=300;
c=200;
printf("\n%d%d",b,c);
}

2) main() //control statements : Decision Structures
{
int x=10,y=20;
if(x==y)
printf("\n%d%d",x,y);
}

3) main() //control statements : Decision Structures
{
int x=3;
float y=3.0;
if(x==y)
printf("\nx and y are equal");
else
printf("\nx and y are not equal");
}

4) main() //arrays
{
int array[26],i;
for(i=0;i<=25;i++)
{
array[i]='A'+i;
printf("\n%d%c",array[i],array[i]);
}
}

5) main()//arrays
{
int sub[50],i;
for(i=0;i<=48;i++);
{
sub[i]=i;
printf("\n%d",sub[i]);

```
        }
    }
```

6)
```
main()
{
    int i = 1;
    for(;;)
    {
        printf ("%d", i);
        i = i+ 1;
        if (i > 10)
         break; /* takes control out of the loop */
    }
}
```

7)
```
main()
{
    inti;
    for (i = 1; i++ <= 5; printf ("%d", i));
}
```

8)
```
main()
{
    inti = 1;
    for (; i++;)
        printf ("%d",i);
}
```

9)
```
main()
{
    int k = -2, j = 4;
    switch (k/=j/k)
    {
        default: printf ("All are same!\n");
        case 0: printf ("Happy birthday\n");
        case 1: printf ("A punch on the mouth\n") ;
        case 2: printf ("A kick in the back\n");
    }
}
```

10)
```
main()
{
    charch = 'E';
    switch (ch)
    {
    case(ch>=65&&ch<=90): printf ("Capital Letter");
```

```
                                        break;
                case (ch >= 97 && ch <= 122): printf ("Small case Letter");
                                        break;
                case(ch>=48&&ch<=57): printf ("Digit");
                                        break;
                 default: printf ("Any other character");
                }
        }
```

2. C Program to Check Whether a Number is Even or Odd
3. C Program to Find the Largest Number Among Three Numbers Entered by User
4. C program to Find all Roots of a Quadratic equation
5. C Program to Check Whether the Entered Year is Leap Year or not.
6. C Program to Find Sum of Natural Numbers
7. C Program to Find Factorial of a Number
8. C program to Generate Multiplication Table
9. C Program to Display Fibonacci Series
10. C Program to Check Whether a Number is Palindrome or Not
11. Code a program to display the following

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

12. Print the values of x initially x=1 until x<50 using do while and for loop.
13. Find grades of the students using switch case : grade A > 80, grade 60>B<80, Grade 35 > C < 60, Fail C < 35
14. C program to Make a Simple Calculator to Add, Subtract, Multiply or Divide Using switch...case
15. Write a program that converts all lowercase characters in a given string to its equivalent uppercase character.

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```
                                        break;
        case (ch >= 97 && ch <= 122): printf ("Small case Letter");
                                        break;
        case(ch>=48&&ch<=57): printf ("Digit");
                                        break;
         default: printf ("Any other character");
        }
    }
```

2. C Program to Check Whether a Number is Even or Odd
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121 123
131 555

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Arrays

1. Predict the Output and analyze it:

1) main()
{
int size = 10;
int arr[size];
for (i = 1 ; i <= size; i++)
{
scanf ("%d",&arr[i]); printf ("\n%d", arr[i]);
}
}

2) main()
{
intarr1[10],arr2[10], i;
for (i = 0 ; i <= 9 ; i++)
{
arr1[i] = 'A' + i;
arr2[i] = 'a' + i;
printf ("%d", arr2[i]-arr1[i]);
}
}

3) main()
{
int arr[25], i;
for (i = 0 ; i <= 100; i++)
{
arr(i) = 100;
printf (" % d a r r [i]) ;
}
}

4) main()
{
static int a[ ] = {10,20,30,40,50};
int j ;
for (j = 0 ; j < 5 ; j++)
{
printf ("%d",*a);
a++;
}
}

5)
```
main()
{
        int n[25];
        n[0] = 100;
        n[24] = 200;
        printf ("%d %d", *n, *(n + 24) + *( n + 0 ) ) ;
}
```

6)
```
int char mixed[100] ;
main( )
{
        int a[10], i ;
        for ( i = 1 ; i <= 10 ; i++ )
        {
                scanf ( "%d", a[i] ) ;
                printf ( "%d", a[i] ) ;
        }
}
```

7)
```
char p[]="The sixth sick sheikh's sixth ship is sick"; //arrays
  main()
 {
        int i=0;
         while(p[i]!='\0')
        {
         printf("%c",p[i]);
          i++;
        }
 }
```

8)
```
main( )
{
        int a[5] = { 5, 1, 15, 20, 25 } ;
        int i, j, k = 1, m ;
         i = ++a[1] ;
        j = a[1]++ ;
         m = a[i++] ;
        printf ( "\n%d %d %d", i, j, m ) ;
}
```

2. Description: Accessing array elements in different ways //arrays and pointers

```
#include<stdio.h>
int main()
{
        int num[5]={24,34,12,44,56,17};
        int i;
```

```
        for(i=0;i<=5;i++)
                scanf("%d",num+i);
        for(i=0;i<=5;i++)
        {
                printf("\naddress=%d",&num[i]);
                printf("element=%d%d",num[i],*(num+i));
                printf("%d",*(i+num));
        }
}
```

3. Description: Program to find average marks obtained by a class of 30 students in a test by making use of array.
4. Write a program to copy the contents of one array into another in the reverse order.
5. Write a program to take user input of 10 numbers and find the smallest number in an array using pointers.
6. Write a program to perform matrix multiplication.
7. Twenty-five numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive, how many are negative, how many are even and how many odd.
8. Write a program to take an annual examination of m subjects of n students. Find the total of all subjects for each student and find the percentage.
    a. print the topper of the class
9. Write a program to find the duplicate element in an array.
10. For the following set of n data points (x, y), compute the correlation coefficient r, given

$$r = \frac{\sum xy - \sum x \sum y}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

x	y
34.22	102.43
39.87	100.93
41.85	97.43
43.23	97.81
40.06	98.32
53.29	98.32
53.29	100.07
54.14	97.08
49.12	91.59
40.71	94.85
55.15	94.65

11. Write a program to construct a magic square for any odd integer n. (10)

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Functions

1. Predict the Output and analyze it:

```
1)  main( )
    {
            printf ( "\nC to it that C survives" ) ;
            main( ) ;
    }
2)  main( )
    {
            int i = 45, c ;
            c = check ( i * 1000 ) ;
            printf ( "\n%d", c ) ;
    }
    check ( int ch )
    {
            if ( ch >= 40000 )
                    return ( ch / 10 ) ;
            else
                    return ( 10 ) ;
    }
```

2. Point out the errors, if any, in the following programs:

```
1)  main( )
    {
        float a = 15.5 ;
        char ch = 'C' ;
    a = printit ( a, ch ) ;
    }

    printit ( a, ch )
    {
            printf ( "\n%f %c", a, ch ) ;
    }
2)  main( )
    {
        message( message ( ) ) ;
    }
    void message( )
```

```
{
    printf ( "\nPraise worthy and C worthy are synonyms" ) ;
}
```

3)
```
main( )
{
    int i = 135, a = 135, k ;
    k = pass ( i, a ) ;
    printf ( "\n%d", k ) ;
}
pass ( int j, int b )
int c ;
{
    c = j + b ;
    return ( c ) ;
}
```

3. Write a function power (a, b), to calculate the value of a raised to b.
4. Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from main( ) and print the results in main( ).
5. Write a program to perform addition and subtraction of numbers with return value of functions.
6. Write a program to perform addition, multiplication & subtraction for matrix using different function
7. C program to Find Sum of Natural Numbers using Recursion
8. C Program to Convert Binary Number to Decimal and Decimal to Binary
9. A positive integer is entered through the keyboard, write a program to obtain the prime factors of the number. Modify the function suitably to obtain the prime factors recursively.
10. Write a recursive function to obtain the first 25 numbers of a Fibonacci sequence. In a Fibonacci sequence the sum of two successive terms gives the third term.
11. Write a C function to evaluate the series

$$\sin(x) = x - (x^3 / 3!) + (x^5 / 5!) - (x^7 / 7!) + \cdots$$

Preprocessing directives

1. Predict the Output and analyze it:

o/p:- 7 25

1)
```
#include<stdio.h>
#define PRODUCT(x) (x*x)
main()
{
    int i=3,j,k;
    j=PRODUCT(i+1);
    k=PRODUCT(++i);
    printf("\n%d %d",j,k);
}
```

2)
```
main()
{
        int i=2;
        #ifdef DEF
                i*=i;
        #else
                printf("\n%d",i);
        #endif
    }
```

i = 2

3)
```
#define SQR(x) x * x //find outerrors if any
main( )
{
    int a ;
    a = 25 / SQR ( 5 ) ;
    printf ( "\n%d", a ) ;
}
```

25

4)
```
#define FOUND printf ( "The Yankee Doodle Virus" ) ;
main( )
{
        char signature ;
        if ( signature == 'Y' )
                FOUND
        else
                printf ( "Safe... as yet !" ) ;
}
```

Safe... as yet

2. Write down macro definitions for the following:
   a. To test whether a character entered is a small case letter or not.
   b. To test whether a character entered is a upper case letter or not.
   c. To test whether a character is an alphabet or not. Make use of the macros you defined in (a) and (b) above.
   d. To obtain the bigger of two numbers
3. Write macro definitions with arguments for calculation of Simple Interest and Amount. Store these macro definitions in a file called "interest.h". Include this file in your program, and use the macro definitions for calculating simple interest and amount.
4. Write a program to find the entered year is leap year using macros.

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2. Write down macro definitions for the following:
   a. To test whether a character entered is a small case letter or not.
   b. To test whether a character entered is a upper case letter or not.
   c. To test whether a character is an alphabet or not. Make use of the macros you defined in (a) and (b) above.
   d. To obtain the bigger of two numbers
3. Write macro definitions with arguments for calculation of Simple Interest and Amount. Store these macro definitions in a file called "interest.h". Include this file in your program, and use the macro definitions for calculating simple interest and amount.
4. Write a program to find the entered year is leap year using macros.

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Strings

1. Predict the Output and analyze it:

```
1) main( )
   {
        char c[2] = "A" ;
        printf ( "\n%c", c[0] ) ;
        printf ( "\n%s", c ) ;
   }
2) main( )
   {
        char s[ ] = "Get organised! learn C!!" ;
        printf ( "\n%s", &s[2] ) ;
        printf ( "\n%s", s ) ;
        printf ( "\n%s", &s ) ;
        printf ( "\n%c", s[2] ) ;
   }
3) main( )
   {
        char name[ ] = "Klinsman" ;
        int i = 0 ;
        while ( name[i] != `\0' )
        {
             printf ( "%c", name[i] ) ;
             i++ ;
        }
   }
4) main()
   {
        static char s[ ] = "Rendezvous!";
        printf ("%d", *( s + strlen ( s ) ) ) ;
   }
5) main()
   {
        char str[20];
        int i;
        for(i = 0 ; i < = 1 8 ; i + + )
        i[str] = ' C ;
        i[str] = \0';
        printf ("%s", str);
   }
6) main( )
```

```
{
        char str1[ ] = { 'H', 'e', 'l', 'l', 'o' } ;
        char str2[ ] = "Hello" ;
        printf ( "\n%s", str1 ) ;
        printf ( "\n%s", str2 ) ;
}
```

7)
```
main()
{
        char str[20];
        static int i;
        for ( ; ; )
        {
                i++[str] = 'A' + 2 ,
                i f ( i = = 1 9 )
                break;
        }
        i[str] = '\0';
        printf ("%s", str);
}
```

8)
```
main( )
{
        printf ( "\n%d%d", sizeof ( '3' ), sizeof ( "3" ), sizeof ( 3 ) ) ;
}
```

9)
```
main()
{
        static char s[ ] = "Oinks Grunts and Guffaws";
        printf ("%c\n",*(&s[2]));
        printf ("%s\n",s + 5 ) ;
        printf ("%s\n",s);
        printf ("%c\n",*(s + 2 ) ) ;
        printf ("%d\n",s);
}
```

10)
```
main( )//point out for error if any
{
        char *str1 = "United" ;
        char *str2 = "Front" ;
        char *str3 ;
        str3 = strcat ( str1, str2 ) ;
        printf ( "\n%s", str3 ) ;
}
```

2. Write a program that converts all lowercase characters in a given string to its equivalent uppercase character.
3. Write a program to sort a set of names stored in an array in alphabetical order.
4. Write a program to delete all vowels from a sentence. Assume that the sentence is not more than 80 characters long.
5. Write a program to find the number of occurrence of vowels,consonants,words,spaces and special characters in the given statement.(hint: inbuilt functions from ctype.h)

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Pointers

1. Predict and analyze:

1)
```
#include <stdio.h>
main() //pointers
{
        float a=13.5;
        float *b,*c;
        b=&a;
        c=b;
        printf("\n%p %p %p",&a,b,c);
        printf("\n%f %f %f %f %f",a,*(&a),*&a,*b,*c);
}
```

2)
```
main() //pointers and array
  {
        int b[]={10,20,30,40,50};
        int i;
        for(i=0;i<=4;i++)
                printf("\n%d",*(b+i));
  }
```

10
20
30
40
50

3)
```
main() //pointers and array
  {
        int b[]={0,20,0,40,5};
        int i,*k;
        k=b;
        for(i=0;i<=4;i++)
        {
                printf("\n%d",*k);
                k++;
        }
  }
```

4)
```
main() //pointers and array (find the errors if any)
        {
                char *mess[5];
                for(i=0;i<5;i++)
                scanf("%s",mess[i]);
        }
```

int i;
char *k=mess
Pf ("Enter the string\n"));
%c
Pf("%p\t",(k+i));
Printf("\n");
}

5) main()// pointers

```
{
        int *p , num;
        p = &num;
        *p = 100;
        printf("%d\n" , num);
        (*p)++;
        printf("%d\n" , num);
        (*p)--;
        printf("%d\n" , num);
}
```

6) #include <stdio.h> // pointers

```
int main ()
{
        /* x is an integer variable. */
        int x = 42;
        /* x_ptr is a pointer to an integer variable. */
        int * x_ptr = & x;
        printf ("x = %d\n", x);
        printf ("x_ptr = %p\n", x_ptr);
        return 0;
}
```

7) main()// function & pointers

```
{
        int i=5,j=2;
        junk(&i,&j);
        printf("\n%d%d",i,j);
}
junk(int *i,int *j)
{
        *i=*i * *j;
        *j=*j * *j;// try for j =j*j
}
```

8) main()

```
{
        charch[20];
        int i;
        for(i = 0;i<19;i++)
        *( ch + i) = 67;
        *(ch + i) = I\0';
        printf ("%s", ch);
}
```

9)
```
#include <stdio.h>
main( )
{
        float a[ ] = { 13.24, 1.5, 1.5, 5.4, 3.5 } ;
        float *j ;
        j = a ;
        j = j + 4 ;
        printf ( "\n%d %d %d", j, *j, a[4] ) ;
}
```

10)
```
main()
{
        static char str[ ] = {48,48,48,48,48,48,48,48,48,48};
        char*s;
        int i;
        s = str;
        for (i = 0; i <= 9; i++)
        {
                if(*s) printf ("%c ",*s); s++;
        }
}
```

2. Predict the values of below expression for given array

```
int x[3][5] = {
                { 1, 2, 3, 4, 5 },
                { 6, 7, 8, 9, 10 },
                { 11, 12, 13, 14, 15 }
                }, *n = &x ;
```

```
*( *( x + 2 ) + 1)
*( *x + 2 ) + 5
*( *( x + 1) )
*( *( x ) + 2 ) + 1
* ( *( x + 1 ) + 3 )
*n
*( n +2 )
(*(n + 3 ) + 1
*(n + 5)+1
 ++*n
```

3. Description: Program to make a function return more than one value at a time

```
#include<stdio.h>
int main()
{
        int radius;
```

```
        float area,perimeter;
        printf("\nenter radius of a circle");
        scanf("%d",&radius);
        areaperi(radius,&area,&perimeter);
        printf("Area=%f",area);
        printf("\n perimeter=%f",perimeter);
}
areaperi(int r,float *a,float *p)
{
        *a=3.14*r*r;
        *p=2*3.14*r;
}
```

4. Program to concatenate two strings without using built in functions (using pointers).
5. Write a function strinstr() that will return the position where one string is present within another string. If the second string doesn't occur in the first string strinstr() should return a 0.

   For example, in the string "somewhere over the rainbow", "over" is present at position
6. Write a program to count the number of occurrences of any two vowels in succession in a line of text. For example, in the sentence

   "Pleases read this application and give me gratuity"

   such occurrences are ea, ea, ui.

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Dynamic Memory Allocation

1. Description: This Program is to illustrate the use of malloc

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
void main()
{
        char *str;

        if((str=(char *)malloc(10))==NULL)    /*Allocate memory for string */
        {
                printf("Out of memory\n");
        }
        strcpy(str,"Hello");    /*      copy "Hello" into str */
        printf("String is %s\n",str);   /*      Display string */
        free(str);              /*      free the allocated memory after usage */
}
```

O/P :- String is hello.

2. Description: This Program is to illustrate the use of realloc

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
void main()
{
char *str;
str = (char *)malloc(10);       /*      Allocate memory for string */
strcpy(str,"Computer");
printf("Address of string %s id %d\n",str,str);
str = (char *)realloc(str,40);  /*      Reallocate memory for altering the size */
strcpy(str,"Embedded System Design");
printf("Address of string %s is %d\n",str,str);
/*Observe the address of the reallocated memory */
free(str);
}
```

3. C program to input and print text using Dynamic Memory Allocation.
4. C program to read a one dimensional array, print sum of all elements along with inputted array elements using Dynamic Memory Allocation.

User defined Data types

1. Analyse and predict the output of following program.

1)
```
struct gospel
{
        int num ;
        char mess1[50] ;
        char mess2[50] ;
} m1 = { 2, "If you are driven by success",
        "make sure that it is a quality drive" } ;
main( )
{
        struct gospel m2, m3 ;
        m2 = m1 ;
        m3 = m2 ;
        printf ( "\n%d %s %s", m1.num, m2.mess1, m3.mess2 ) ;
}
```

2. Point out the errors, if any, in the following programs

1)
```
main( )
{
    struct employee
    {
        char name[25] ;
        int age ;
        float bs ;
    } ;
    struct employee e ;
    strcpy ( e.name, "Hacker" ) ;
    age = 25 ;
    printf ( "\n%s %d", e.name, age ) ;
}
```

2)
```
struct virus {
    char signature[25] ;
    char status[20] ;
    int size ;
```

```
} v[2] = {
            "Yankee Doodle", "Deadly", 1813,
            "Dark Avenger", "Killer", 1795
            } ;
main( )
    {
            int i ;
            for ( i = 0 ; i <=1 ; i++ )
            printf ( "\n%s %s", v.signature, v.status ) ;
    }
```

3)
```
#include<stdio.h>
    int main()
    {
            union a
            {
                    int i;
                    char ch[2];
            };
            union a key;
            key.i=512;
            printf("\nkey.i=%d",key.i);
            printf("\nkey.ch[0]=%d",key.ch[0]);
            printf("\nkey.ch[1]=%d",key.ch[1]);
    }
```

3. Write a program to display the contents of a structure passing the individual elements to a function
4. C Program to Add Two Complex Numbers by Passing Structure using functions.
5. Create a structure to specify data on students given below:

   Roll number, Name, Department, Course, Year of joining. Assume that there are not more than 450 students in the collage.

   (a) Write a function to print names of all students who joined in a particular year.

   (b) Write a function to print the data of a student whose roll number is given.
6. Write a program that compares two given dates. To store date use structure say date that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal".

7. Create a structure to specify data of customers in a bank. The data to be stored is: Account number, Name, Balance in account. Assume maximum of 200 customers in the bank.

   (a) Write a function to print the Account number and name of each customer with balance below Rs. 100.

   (b) If a customer request for withdrawal or deposit, it is given in the form: Acct. no, amount, code (1 for deposit, 0 for withdrawal)

   (c) Write a program to give a message, "The balance is insufficient for the specified withdrawal".

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Data Files

1. Point out the errors, if any, in the following programs

1) main( )
```
{
    char fname[ ] = "c:\\students.dat" ;
    FILE *fp ;
    fp = fopen ( fname, "tr" ) ;
    if ( fp == NULL )
    printf ( "\nUnable to open file..." ) ;
}
```

2) main( )
```
{
        FILE *fp ;
        char name[25] ;
        int age ;
        fp = fopen ( "YOURS", "r" ) ;
        while ( fscanf ( fp, "%s %d", name, &age ) != NULL )
        fclose ( fp ) ;
}
```

3) main( )
```
{
        FILE *fp ;
        char names[20] ;
        int i ;
        fp = fopen ( "students.c", "wb" ) ;
        for ( i = 0 ; i <= 10 ; i++ )
        {
                puts ( "\nEnter name " ) ;
                gets ( name ) ;
                fwrite ( name, size of ( name ), 1, fp ) ;
        }
        close ( fp ) ;
}
```

2. C Program to Store Information of 10 Students Using Structure and write the student details to file "student.txt".

3. Write a program to read a file and display contents with its line numbers.
4. Write a program to copy one file to another. While doing so replace all lowercase characters to their equivalent uppercase characters.
5. Create a structure to specify data on students given below: Roll number, Name, Department, Course, Year of joining

   Assume that there are not more than 50 students in the collage.

   (a) Write student detail into file studentdetail.txt

   (b) Write a function to print names of all students who joined in a particular year ,fetch the details from file
6. Write a function to print the data of a student whose roll number is given.
7. Write a program to carry out the following:

   (a) To read a text file "data.TXT" consisting of a maximum of 5 lines of text, each line with a maximum of 20 characters.

   (b) Count and display the number of words contained in the file.

   (c) Display the total number of letter in the text file.

   (d) Assume that the end of a word may be a space, comma or a full-stop followed by one or more spaces or a newline character.
8. Write a program to carry out the following:

   (a) Read a text file 'INPUT.TXT'

   (b) Print each word in reverse order

   Example, Input: INDIA IS MY COUNTRY

   Output: AIDNI SI YM YRTNUOC

   (c) Assume that each word length is maximum of 10 characters and each word is separated by newline/blank characters.

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Search & Sort Methods

1. Write a program to implement
    a) Binary search using functions.
    b) Linear search
    c) Bubble sort
    d) Selection sort

Data Structures

1. Write a program to implement Stack using global variables.
2. Write a program to implement stack by passing parameters.
3. Write a program to implement queue using global variables.
4. Write a program to implement queue by passing parameters.
5. Write a program to convert from infix expression into postfix expression.

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