Subject: Fundamental of Computer Programming
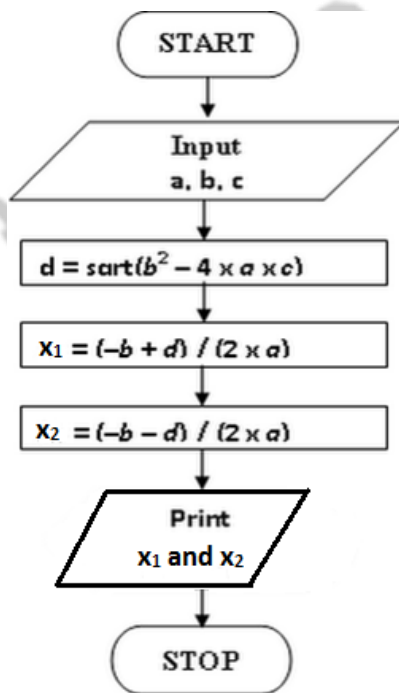
2067

1. **Draw the flowchart for the solution of a quadratic equation and write algorithm and explain it.**

   Ans:

   Algorithm:

Step 1:	Input a, b, c
Step 2:	$d = \text{sqrt}(b^2 - 4 \times a \times c$
Step 3:	$x_1 = (-b + d) / (2 \times a)$
Step 4:	$x_2 = (-b - d) / (2 \times a)$
Step 5:	Print x_1 and x_2

   Flowchart:

2. **Find the value of "a" in each of the following statements.**

   Int i=2,j=5,k=7;

   Float a=1.5,b=2.5,c=3.5;

   (a) a=c-i/j+c+k

   (b) a=(c-i)/k+(j+b)/k

   (c) a=b*b-((ai+j)/c)

   (d) a=b-k+j/k+i*c

   (e) a=c+k%2+b

   (f) a=(b+4)%(c+2)

Same as 2065 question no2.

3. **A machine is purchased which will produce earning of Rs. 20000 per year while it lasts. The machine costs Rs. 120000 and will have a salvage value of Rs. 20000 when it is condemned. If the 12 percent per annum can be earned on alternative investmenst what should be the minimum life of the machine to make it a more attractive investment compared to alternative investements?**
   Ans:
   Do yourself

4. **Write a program to transpose the following matrix.**

   Do yourself

5. **Write a program that uses a do...while loop to compute and prints the sum of squares given n numbers.**
   Ans:
   ```
   #include < stdio.h >
   void main()
   {
        Int n;
        int sum=0;
        printf("upto which number?:");
        scanf("%d",&n);
        do
        {
            sum+=(n*n);
            n--;
        }
        while(n>0);
        printf("sum=%d",sum);
        getch();
   }
   ```

6. **Write a function to multiply two nxn matrices.**
   Ans:
   ```
   #include<stdio.h>
   int main()
   {
      int i,j,l;
   ```

```c
int matrix[3][3],matri[3][3],matr[3][3]={{0,0,0},{0,0,0},{0,0,0}};
printf("Enter 1st matrix: \n");
for (i=0;i<3;++i)
{
        printf("\nEnter #%d row: ",(i+1));
        for (j=0;j<3;++j)
        scanf_s("%d",&matrix[i][j]);
}
printf("\n\n");
printf("Enter 2nd matrix: \n");
for (i=0;i<3;++i)
{
        printf("\nEnter #%d row: ",(i+1));
        for (j=0;j<3;++j)
                scanf_s("%d",&matri[i][j]);
}
for (j=0;j<3;++j)
{
        for (i=0;i<3;++i)
        {
                for (l=0;l<3;++l)
                        matr[i][j] = matr[i][j] + (matrix[i][l])*(matri[l][j]);
        }
}
printf("The resultant matrix is:\n\n");
for (i=0;i<3;++i)
{
        for (j=0;j<3;++j)
                printf("%4d",matr[i][j]);
        printf("\n\n");
}
return( 0 );
}
```

7. **Write a program to count the number of words in a sentence.**
   Ans:
```c
#include<stdio.h>
#include<string.h>
void main()
{
int count,i,len;
```

```
char str[100];
printf("enter the sentence");
gets(str);
len=strlen(str);
for(i=0;i<=len;i++)
{
while(str)
if(str[i]==' ') count++;
}
printf("the number of words are :\t%d",count+1);
}
```

8. **Why pointer is called jewel of C language? Write a program that uses pointers to copy an array of integer.**

   Ans:

   In c a pointer is a variable that points to or references a memory location in which data is stored. Each memory cell in the computer has an address that can be used to access that location so a pointer variable points to a memory location we can access and change the contents of this memory location via the pointer.

   OR

   Explain the importance of pointer. Write a function that is passed an array of n pointers to floats and returns a newly created array that contains those n float values.

   Ans:

   pointers have a number of useful applications.

   Firstly, a number of things you do all the time use pointers, even if you are not aware. A struct is a pointer. An array is a pointer. A string is a pointer. A class is a pointer. There is no way of representing a number of associated objects without using pointers in some form or another.

   Also, pointers are useful for efficiency. If you pass ten thousand ints to a function, you will have a substantial time penalty, unless you pass a pointer to an array of ten thousand ints.

9. **Define a structure of student having data member's name, address, marks in C language, and marks in information system. Take data for n students in an array dynamically and find the total marks obtained.**

Do yourself

10. Some text file is given; create another text file replacing the following words "Ram" to "Hari", "Sita" to "Gita", and "Govinda" to "Shiva".
Ans:

```c
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<string.h>
#include<ctype.h>

main()
{
    FILE *ptr,*ptr1;
    int i=0,j,n[10],k=0,l;
    char line[150],word1[30],word[30];
    printf("* This Is A Program To Replace The Words 'Ram' to 'Hari', 'Sita' to 'Gita', & 'Govinda' to 'Shiva' . *\n\n");
    printf("Enter Your String : ");
    gets(line);
    l=strlen(line);
    for(i=0;i<l;i++)
    {
            if(line[i]==' ')
            k++;
            }

    //printf("\nEnter a Word To Delete : ");
    //gets(word1);
    ptr=fopen("original.txt","w");
    //fprintf(ptr,"%s","This Is The Original Strings With Out Replacement :\n\t");
    for(i=0;i<l;i++)
    {
            fprintf(ptr,"%c",line[i]);
            }
    fclose(ptr);
    printf("\n\nThe New String After Deletion : \n\n\t");
    ptr=fopen("original.txt","r");
    ptr1=fopen("replace.txt","w");

    while(!feof(ptr))
    {
```

```c
                fscanf(ptr,"%s",&word);
                if(strcmp(word,"Ram")==NULL)
                {
                                printf("%s ","Hari");
                                fprintf(ptr1,"%s ","Hari");
                                }
                else if(strcmp(word,"Sita")==NULL)
                {
                                printf("%s ","Gita");
                                fprintf(ptr1,"%s ","Gita");
                                }

                else if(strcmp(word,"Govinda")==NULL)
                {
                                printf("%s ","Shiva");
                                fprintf(ptr1,"%s ","Shiva");
                                }
                else
                {
                   fprintf(ptr1,"%s ",word);
                   printf("%s ",word);
                   }
                }
        fclose(ptr);

    getch();
    }
```

 OR

What are the uses of graphical function? Explain the basic graphical function with suitable program.

Ans:

The use of graphical function in c programming is to draw the graphics in the c console. Different shapes can be drawn using graphical function in c.

There are numerous graphics functions available in c. But let us see some to have an understanding of how and where a pixel is placed in each when each of the graphics function gets invoked.

putpixel(x, y, color)

->The functionality of this function is it put a pixel or in other words a dot at position x, y given in inputted argument

Line(x1, y1, x2, y2)

->The functionality of this function is to draw a line from (x1,y1) to (x2,y2).

getpixel(x, y)

->This function when invoked gets the color of the pixel specified. The color got will be the integer value associated with that color and hence the function gets an integer value as return value.

```c
#include<graphics.h>

void main()

{int gd= DETECT, gm;

initgraph(&gd,&gm,"c:\\tc\\bgi");

circle(200,100,10);

setcolor(WHITE);

 getch();

 closegraph()

}
```