

1. Why flow chart is required? Explain different symbols used in the flow chart and explain with suitable example.

Ans:

A flowchart is required because of following reasons:

- a. It is a better way of communicating the logic of a system to all concerned.
- b. Problem can be analyzed in more effective way.
- c. It acts as a guide or blueprint during the system analysis and program development phase.
- d. It helps in debugging process.

2. Determine which of the following are valid identifiers? If invalid, explain why?

- (a) record1
- (c) file_3
- (e) #tax
- (g) goto
- (i) name-and-address
- (k) void

Ans:

record1

→This is valid identifier.

file_3

→This is valid identifier.

#tax

→Invalid identifier because identifier must begin with a letter and special character like # is not permitted in identifiers.

goto

→Invalid identifier because keywords cannot be used as an identifier.

Name-and-address

→Invalid identifier because hyphen or dash is not permitted.

void

→Invalid identifier because keywords cannot be used as an identifier.

3. Find the error in the given program and explain it. Write the correct program.

```
#include<stdio.h>
#include<math.h>
main
{
Float p,r,n;
printf("Please enter a value for the principal(P):");
scanf(%f,&p);
printf("Please enter a value for the interest rate(R));
scanf("%f",&r);
```

```
printf("Please enter a value for the number of years(n):");
scanf("%f",&n);
f = p *pow (p+r/100),n);
printf("\n The final value(F) is: %.2f\n",f);
```

Ans:

```
#include<stdio.h>
#include<math.h>
void main()
{
    float p,r,n,f;
    printf("Please enter a value for the Principal(P)");
    scanf("%f",&p);
    printf("Please enter a value for the Interest Rate(R)");
    scanf("%f",&r);
    printf("Please enter a value for the number of years(n)");
    scanf("%f",&n);
    f=pow((p+r/100),n);
    printf("\n The final value is: %f \n",f);
}
```

4. Write a program that uses a "while" loop to compute and prints the sum of a given numbers of squares. For example, if 4 is input, then the program will print 30, which is equal to $1^2+2^2+3^2+4^2$.

Ans:

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

5. Write a program to enter two 3x3 matrices and calculate the product of given matrices.

Ans:

```
#include<stdio.h>
#include<conio.h>
void main()
```

```

{
    int a[3][3],b[3][3],c[3][3];
    int i,j,k;
    printf("Enter matrix A:\n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("Enter matrix B:\n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            C[i][j]=0;
            for(k=0;k<3;k++)
            {
                C[i][j]+=a[i][k]*b[k][j];
            }
        }
    }
    printf("\n Product of two matrix: \n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            printf("%d",c[i][j]);
        }
        printf("\n");
    }
    getch();
}

```

6. Explain the use of two dimensional arrays. Illustrate it with suitable program and explain it.

Ans:

A two-dimensional array is arrays which are arranged in two directions: horizontal and vertical. The data items arranged in horizontal

direction are referred as rows and the data items arranged in vertical direction are referred as columns.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int A[4][4];
    printf("Enter any 2x2 matrix\n");
    for(int i=0;i<2;i++)
    {
        for(int j=0;j<2;j++)
        {
            scanf("%d",&A[i][j]);
        }
    }
    printf("Entered matrix is\n");
    for(i=0;i<2;i++)
    {
        for(int j=0;j<2;j++)
        {
            printf("%3d",A[i][j]);
        }
    }
    getch();
}
```

7. Write and test the following power () function that returns x raised to the power n, where n can be any integer:
double power(double x, int p)

Ans:

```
#include <stdio.h>
double power(double x, int p);
void main()
{
    double x = 0.0;
    int p = 0;
    for(x = 2.0 ; x<= 5.0; x++)
    {
        for(p = 0 ; p<5 ;p++)

        printf("%.2lf raised to the power %d = %.2lf\n", x,p, power(x,p));
    }
}
double power(double x, int p) {
    if(p == 0)
```

```

    return 1.0;
else
    return x * power( x , p - 1 );
}

```

9. Why structure is required? Make a program using structure of booklist having data member's title, author, and cost. Enter four data and calculate total cost.

Ans:

A structure is required because it provides a means of grouping variables under a single name for easier handling and identification.

```

#include<stdio.h>
#include<conio.h>
struct book
{
    char title[50];
    char author[50];
    int cost;
};
void main()
{
    struct book P;
    int i,sum=0;
    for(i=0;i<4;i++)
    {
        printf("Enter book title \n");
        gets(P[i].title);
        printf("Enter Author name: \n");
        gets(P[i].author);
        printf("Enter cost of book:\n");
        scanf("%d",&P[i].cost);
        sum=sum+P[i].cost;
    }
    printf("Total cost of books:",%d"sum);
    getch();
}

```

10. Create a text file and enter "to write a good program is very time consuming job. "Create another text which contains reverse of above text.

Ans:

```

#include<stdio.h>
#include<conio.h>
void main()
{
    FILE *fp,*f;
    char str[]="To write a good program is very time consuming";
    int i;
    fp=fopen("old.txt","w");

```

```
fputs(str,fp);
f=fopen("new.txt","w");
for(i=strlen(str);0<i;i--)
fputc(str[i],f);
fclose(fp);
fclose(f);
}
```

OR

C graphical function is used to draw different shapes, display text in different fonts, change colors and many more. Using functions of graphics.h we can make graphics programs, animations, projects and games. We can draw circles, lines, rectangles, bars and many other geometrical figures.

Example:

```
#include<stdio.h>
#include<graphics.h>
#include<conio.h>
```

```
Void main()
{
int gd = DETECT, gm;

initgraph(&gd, &gm, "C:\\TC\\BGI");
line(100, 100, 200, 200);
arc(100, 100, 0, 135, 50);
circle(100,100,50);
getch();
closegraph();
}
```

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