Answers

Q1) Exchange the secondary diagonal with 2nd row in two dimensional array a(4,4), print it in shape of 2 dimensional array before and after exchange, then find largest number in 4th column.

```
#include <iostream.h>
#include <conio.h>
#define r 4

int main()
{
 int a[r][r],i,j;
 clrscr();
cout <<"Read\n----\n";
 for (i=0;i<r;i++)
 for (j=0;j<r;j++)
 {
  cout <<"a["<<i<<"]["<<j<<"]=";
  cin >> a[i][j];
 }
cout <<"\nprint before exchange\n----------------------\n";
 for (i=0;i<r;i++)
 {
  for (j=0;j<r;j++)
    cout <<a[i][j]<<"\t";
  cout<<"\n";
 }

 int z;
//exchange

 for (i=0,j=r-1;i<r;i++,j--)
  {
  z=a[i][j];
  a[i][j]=a[1][i];
  a[1][i]=z;
  }

cout <<"\nprint after exchange\n----------------------\n";
 for (i=0;i<r;i++)
 {
  for (j=0;j<r;j++)
    cout <<a[i][j]<<"\t";
  cout<<"\n";
 }

// To find largest no. in 4th column
int l=a[0][3]; // 1st no. 4th column
 for (i=0;i<r;i++)
   if (a[i][3]>l)
     l=a[i][3];
  cout<<"\n largest no. in 4th column="<<l;

 cout << "\nHit any key";
  getch();
  return 0;

 }
```

Q2) a)Write a program to solve the following equation:

$$sum = 5 + \frac{2}{3} - \frac{6}{12} + \frac{10}{48}$$

```
#include <iostream.h>
#include <conio.h>
int main()
{
float sum=5.0;
clrscr();
for (int i=3,j=2,s=1;i<=48;i*=4,j+=4,s=-s)
 {
    cout <<"i="<<i<<" j="<<j<<" s="<<s<<"\n"; // for test
    sum=sum+s*(float )j/i;
  }
```

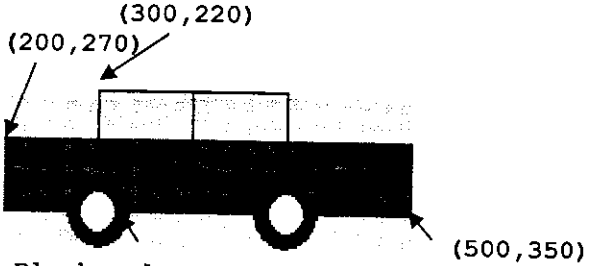
```
  cout<<"sum="<<sum;
cout << "\n\nHit any key to continue";
getch();
return 0;
}
```

b) Write a program contains a function that returns the cubic of the number passed to it

```
#include <iostream.h>
#include <conio.h>
int cubic(int a);

int main()
{
int x,y;
 clrscr();
 cout << "Enter the number you want to cube:";
 cin>>x;
 y=cubic(x);
 cout <<" Cubic number is "<<y;
cout << "\n\nHit any key to continue";
getch();
 return 0;
}
int cubic(int a)
{
   return a*a*a;
}
```

Q3) Write a program to draw the red car **(10 Marks)**



Black color, and the insider color is white

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

int main(void)
{
   /* request auto detection */
   int gdriver = DETECT, gmode, errorcode;
 /* initialize graphics mode */
   initgraph(&gdriver, &gmode, "");

  /* read result of initialization */
   errorcode = graphresult();

   if (errorcode != grOk)  /* an error occurred */
   {
      printf("Graphics error: %s\n", grapherrormsg(errorcode));
      printf("Press any key to halt:");
      getch();
      exit(1);             /* return with error code */
   }
   setfillstyle(1, 15);
   bar(0, 0, 639, 479);

   setfillstyle(1, 4);
   bar(200, 270, 500, 350);
```

```
   setcolor(0);
   circle(300, 350,20);
   circle(400, 350,20);
   setfillstyle(1, 0);
   floodfill(300,350,0);
   floodfill(400,350,0);

   setcolor(15);
   circle(300, 350,10);
   circle(400, 350,10);
   setfillstyle(1, 15);
   floodfill(300,350,15);
   floodfill(400,350,15);

   setcolor(0);
   line(300,270,300,220);
   line(300,220,400,220);
   line(400,220,400,270);
   line(350,220,350,350);
   /* clean up */
   getch();
   closegraph();
   return 0;
}
```

Q4)a) **Write a program to find the locations of odd numbers which accept division by 3 without remainder, their numbers and summation between 9 numbers**

```
 #include <iostream.h>

#include <conio.h>
int main()
{
 int a[9],i,sum=0,n=0;     // i declared here or in 1st loop
 clrscr();
cout <<"Read\n----\n";
 for (i=0;i<9;i++)
 {
  cout <<"a["<<i<<"]=";
  cin >> a[i];
// you can make the checking here
 }

for (i=0;i<9;i++)
   if ((a[i]%2)&& (!(a[i]%3)))
    {cout <<"odd number which accept division by 3 is found at location:
"<<i<<"\n";

Sum+=a[i]; n=n+1;
 }
 cout << "\nNumbers of odd numbers which accept division by 3 is:"<<n;
 cout << "\nSummation of odd numbers which accept division by 3
is:"<<sum;


 cout <<"\nHit any key to continue";

 getch();
 return 0;
}
```

b) Write a program to solve the following equations, where Q in degree

$$y = \begin{cases} |\cos Q - e^{Q}| & 5 \le x < 20 \\ \dfrac{-b + \sqrt{b^2 - 4ac}}{2a} & 40 \ge x > 30 \end{cases}$$

```
#include <iostream.h>
#include <conio.h>
#include <math.h>
int main()
{
 double y,x,a,b,c,Q;
 clrscr();
 cout <<"x="; cin >>x;
 if ((x>=5)&& (x<20))
 {
   cout <<"Q="; cin >>Q;
   y=fabs(cos(Q*3.14/180)-exp(Q));
 }
 else if ((x<=40)&& (x>30))
 {
  cout <<"a="; cin >>a;
  cout <<"b="; cin >>b;
  cout <<"c="; cin >>c;
  double bs=b*b-4*a*c;
  if ((a) && (bs>0))
   y=(-b+sqrt(bs))/2*a;
  else
   {
    cout <<"Error illegal values";
    getch();
    return 1;
   }
 }
 cout <<"y="<<y;
 getch();
 return 0;
}
```

Q 5) Answer by true or false and correct the false statement (choose 5)

1) `FILE *p; int a=5; p=fopen("test","w"); printf(p,"%d",a);` False `fprintf(p,"%d",a);`
2) `int i=5,j=3,k; k=(i!=j):4?8;` False `k=(i!=j)?4:8;`
3) `sound(7); delay(20); nosound();` True
4) `#include <string.m>` False `#include <string.h>`
5) `char far *p; p=(char far *)MK_FP(0xb800,0); farfree(p)';` False `char far *p; p=(char far *)MK_FP(0xb800,0);`
6) `float z=2.5*10^7;` False `float z=2.5e7;`

Q6) What is the result of the following statements: (choose 5)

1) `b=(a=8,a>>2);` `//a=8 b=2`
2) `char s[20]; strcpy(s,"Help"); strrev(s);` `//s="pleH"`
3) `int x=7,y; y=--x;` `//x=6 y=6`
4) `double x=2,y; y=pow(x,3);` `//x=2 y=8`
5) `int a[4]={5,2,7,4};` `// *(a+2)=7`
6) `int x=6,y; y=x%3;` `//x=6 y=0`