Experiment No. 10: Mini Project

Theory:

- For moving any object, we incrementally calculate the object coordinates and redraw the picture to give a feel of animation by using for loop.
- Suppose if we want to move a circle from left to right means, we have to shift the position of circle along x-direction continuously in regular intervals.
- The below programs illustrate the movement of objects by using for loop and also using transformations like rotation, translation etc.
- For windmill rotation, we use 2D rotation concept and formulas.

Program:

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include<malloc.h>
#include<dos.h>
#include <conio.h>
int xasp,yasp,gdriver = VGA, gmode=VGAMED, errorcode;
struct pos
{
 int x;
 int y;
};
struct face
{
 int radius;
struct pos posiϴon;
 int mood;
};
typedef struct face face;
face *face1;
void getposiϴon()
{
prinɳ("Enter X Co-ordinate:");
 scanf("%d",&face1->posiϴon.x);
prinɳ("Enter X Co-ordinate:");
 scanf("%d",&face1->posiϴon.y);
}
void drawface()
{
```

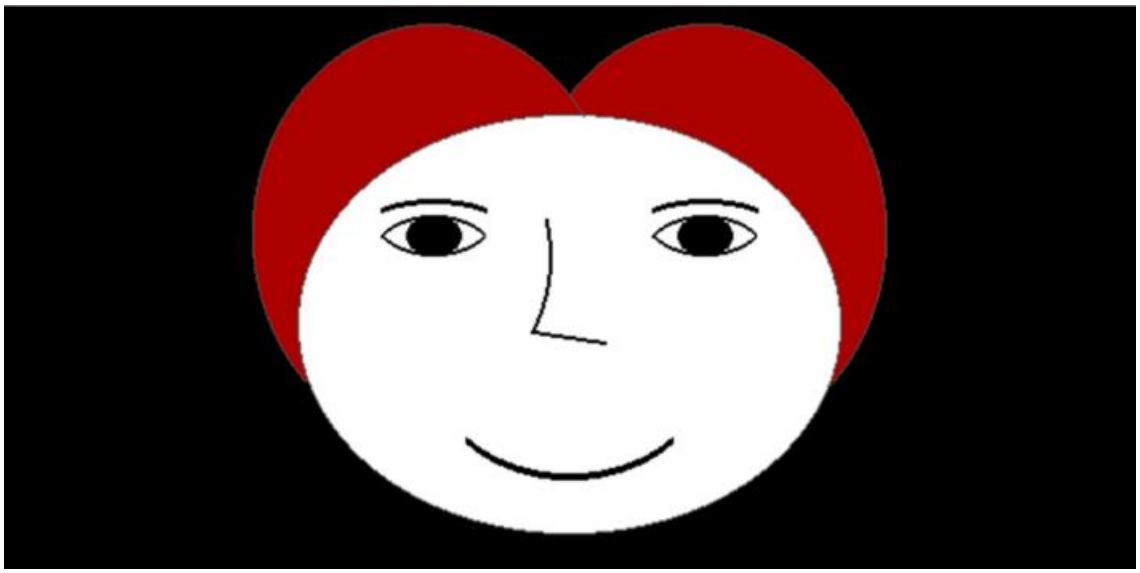
```
 char ch='x';
 int i=0,x,y,color,r,imgsize,dif;
 x=face1->posiϴon.x=320;
 y=face1->posiϴon.y=180;
 face1->radius=150;
 color=15;
 r=face1->radius;
 setbkcolor(0);
getaspectraϴo(&xasp,&yasp);
 setcolor(8);
 circle(x,y,face1->radius);
seɳillstyle(1,color);
 floodfill(x,y,getcolor());
 draweyes(face1);
 drawhair(face1);
 drawmouth(face1);
 drawnose(face1);
}
drawnose()
{
 int i,x,y,r;
 x=face1->posiϴon.x;
 y=face1->posiϴon.y;
 r=face1->radius;
 setcolor(0);
 for(i=0;i<2;i++)
 {
 arc(x-160-i,y-r/4,340-i,10,r);
 line(x-20,y+4+i,x+20,y+10+i);
 }
}
draweyes()
{
 int i,x1,x2,y1,y2,r;
 setcolor(0);
 r=face1->radius;
 x1=face1->posiϴon.x-r/2;
 y1=face1->posiϴon.y-r/4;
 x2=face1->posiϴon.x+r/2;
 y2=face1->posiϴon.y-r/4;
setaspectraϴo(xasp/2,yasp);
```

```
 arc(x1,y1-r/8,40,140,r/4);//leŌ eyebrow
 arc(x1,y1-r/8+1,40,140,r/4);//leŌ eyebrow
 arc(x1,y1-r/8+2,40,140,r/4);//leŌ eyebrow
setaspectraѲo(xasp,yasp);
 for(i=0;i<2;i++)
 {
 arc(x1,y1+i+5,40,140,r/4); //upper leŌ eye
 arc(x1,y1-r/5+i,220,320,r/4); //lower leŌ eye
 }
 circle(x1,y1-r/12,r/10);//leŌ pupul
seɳillstyle(1,0);
 floodfill(x1,y1-r/10,getcolor());
seɳillstyle(1,WHITE);
 floodfill(x1-15,y1-r/6,getcolor());
setaspectraѲo(xasp/2,yasp);
 arc(x2,y2-r/8,40,140,r/4);//right eyebrow
 arc(x2,y2-r/8+1,40,140,r/4);//right eyebrow
 arc(x2,y2-r/8+2,40,140,r/4);//right eyebrow
setaspectraѲo(xasp,yasp);
 for(i=0;i<2;i++)
 {
 arc(x2,y2+i+5,40,140,r/4);//upper right eye
 arc(x2,y2-r/5+i,220,320,r/4);//lower right eye
 }
 circle(x2,y2-r/12,r/10);//right pupil
seɳillstyle(1,0);
 floodfill(x2,y2-r/12,getcolor());
seɳillstyle(1,WHITE);
 floodfill(x2-15,y2-r/6,getcolor());
}
drawmouth()
{
 int x,y,r,i;
 x=face1->posiѲon.x;
 y=face1->posiѲon.y+(face1->radius/1.5);
 r=face1->radius;
 setcolor(BLACK);
 if((face1->mood)==1)
 for(i=0;i<4;i++)
 arc(x,y-r/2+i,220,320,r/2);//make happy
 if((face1->mood)==0)
```

```
 for(i=0;i<4;i++)
 arc(x,y-i,40,140,r/2);//make sad
}
drawhair()
{ int x,y,r;
 setcolor(8);
setaspectraΘo(xasp,yasp/1.5);
 r=face1->radius;
 x=face1->posiΘon.x-r/2;
 y=face1->posiΘon.y-r/3;
 arc(x,y,34,225,100);
 arc(x+r,y,314,138,100);
seηillstyle(1,RED);
 floodfill(x,y-70,getcolor());
 floodfill(x+r,y-70,getcolor());
setaspectraΘo(xasp,yasp);
}
void main(void)
{
 int i=0;
 initgraph(&gdriver, &gmode,"C:\\TC\\BGI");
 while(!kbhit())
 {
 if((i%2)==1)
 {
 setvisualpage(1);
 setacΘvepage(0);
 clearviewport();
 face1->mood=0;
 drawface();
 delay(1000);
 }
 else
 {
 setvisualpage(0);
 setacΘvepage(1);
 clearviewport();
 face1->mood=1;
 drawface();
 delay(300);
 }
```

```
 i++;
 }
getch();
closegraph();
}
```

Output:



Conclusion - Comment on :

1. Importance of story building
2. Defining the basic character of story
3. Apply techniques to these characters