Amity School of Engineering and Technology

COMPUTER GRAPHICS OPEN ENDED EXPERIMENT

Simple Clock

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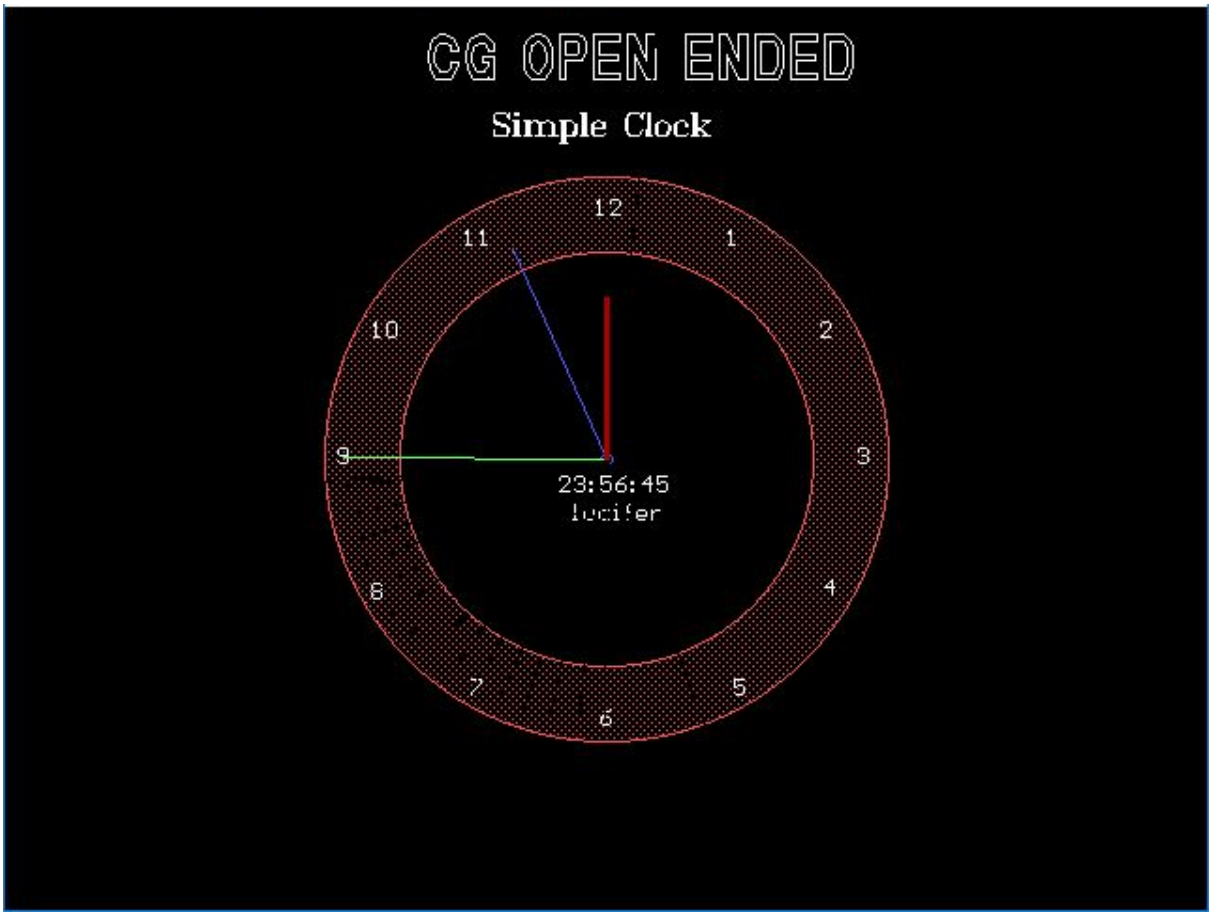
Simple Clock




```
#include<conio.h>
#include<dos.h>
#include<graphics.h>
#include<math.h>
#include<stdlib.h>
#include<string.h>

#define CLOCKX 320
#define CLOCKY 240

#define CLOCK_CENTER_R 3
#define CLOCK_INNER_R 110
#define CLOCK_BORDER_WIDTH 40

#define SECONDHAND_LENGTH 140
#define MINUTEHAND_LENGTH 122
#define HOURHAND_LENGTH 86

#define RAD_CONVERSION .1047198
```

```
#define QUAD_FIX 4.712389

void draw()
{
   clearviewport();
   setbkcolor(BLACK);   //Set The Background Color to 0

   // Set Line Styles and draw the center circle
   setlinestyle(SOLID_LINE, 0, NORM_WIDTH);
   setcolor(LIGHTBLUE);
   circle(CLOCKX, CLOCKY, CLOCK_CENTER_R);

   // Set Line Styles and draw inner and outer circles for dial border
   setcolor(LIGHTRED);
   circle(CLOCKX, CLOCKY, CLOCK_INNER_R);
   circle(CLOCKX, CLOCKY, CLOCK_INNER_R + CLOCK_BORDER_WIDTH);
   // Fill the enclosed area above
   setfillstyle(CLOSE_DOT_FILL, LIGHTRED);
   floodfill(CLOCKX-CLOCK_INNER_R-2, CLOCKY+2, LIGHTRED);


   // Add time
   settextstyle(SMALL_FONT, HORIZ_DIR, 5);
   setcolor(WHITE);
   outtextxy(314,98,"12");

   outtextxy(384,114,"1");
   outtextxy(244,114,"11");

   outtextxy(434,163,"2");
   outtextxy(195,163,"10");

   outtextxy(454,230,"3");
   outtextxy(177,230,"9");

   outtextxy(317,369,"6");

   outtextxy(436,300,"4");
   outtextxy(195,302,"8");

   outtextxy(388,353,"5");
   outtextxy(248,353,"7");

   outtextxy(CLOCKX-18, CLOCKY+20, "lucifer");

   settextstyle(BOLD_FONT, HORIZ_DIR, 1);
```

```
    outtextxy(CLOCKX-95, 2, "CG OPEN ENDED");
    settextstyle(TRIPLEX_FONT, HORIZ_DIR, 1);
    outtextxy(CLOCKX-60, 50, "Simple Clock");

}
void main()
{

    int gd=0,gm;
    initgraph(&gd,&gm,"c:\\turboc3\\bgi");

    draw();

    int x,y;   // for second
    int q,w;   // for minute
    int ta,d;  // for hour
    int count=0;  // for resetting
    struct time t;
    float angle_sec, angle_min, angle_hour;

    while(!kbhit())
    {
          if(count/2 >= 30){
             draw();    //draw the clock
             count = 0;
          }

          gettime(&t);  //get current ttime

          angle_sec = QUAD_FIX + t.ti_sec*RAD_CONVERSION;
          angle_min = QUAD_FIX + t.ti_min*RAD_CONVERSION;
          angle_hour = QUAD_FIX + t.ti_hour * 5*RAD_CONVERSION ;

          // Move Hour Hand in between the shifts
          if(t.ti_min>=12&&t.ti_min<24)
          {
             angle_hour = angle_hour + 2*RAD_CONVERSION;
          }
          if(t.ti_min>=24&&t.ti_min<36)
          {
             angle_hour = angle_hour + (3*RAD_CONVERSION);
          }
          if(t.ti_min>=36&&t.ti_min<48)
          {
             angle_hour=angle_hour+(4*RAD_CONVERSION);
          }
```

```
if(t.ti_min>=48&&t.ti_min<60)
{
   angle_hour=angle_hour+(5*RAD_CONVERSION);
}


char timeNow[9] = "";
char temp[3];
itoa(t.ti_hour, temp, 10);
strcat(timeNow, temp);
strcat(timeNow, ":");

itoa(t.ti_min, temp, 10);
strcat(timeNow, temp);
strcat(timeNow, ":");

itoa(t.ti_sec, temp, 10);
strcat(timeNow, temp);

settextstyle(SMALL_FONT, HORIZ_DIR, 5);
setcolor(WHITE);
outtextxy(CLOCKX-25, CLOCKY+5, timeNow);

/* Mix the previous lines to background **/
setlinestyle(SOLID_LINE, 0, NORM_WIDTH);
setcolor(0);
line(CLOCKX, CLOCKY, x,y);
line(CLOCKX, CLOCKY, q,w);
line(CLOCKX, CLOCKY, ta,d);

/* Draw New Lines */

x = CLOCKX+SECONDHAND_LENGTH*cos(angle_sec);
y = CLOCKY+SECONDHAND_LENGTH*sin(angle_sec);

q = CLOCKX+MINUTEHAND_LENGTH*cos(angle_min);
w = CLOCKY+MINUTEHAND_LENGTH*sin(angle_min);

ta = CLOCKX+HOURHAND_LENGTH*cos(angle_hour);
d = CLOCKY+HOURHAND_LENGTH*sin(angle_hour);

setcolor(LIGHTGREEN);
setlinestyle(SOLID_LINE, 0, NORM_WIDTH);
line(320,240,x,y);

setcolor(LIGHTBLUE);
```

```
        setlinestyle(SOLID_LINE, 0, NORM_WIDTH+1);
        line(320,240,q,w);

        setcolor(RED);
        setlinestyle(SOLID_LINE, 0, THICK_WIDTH);
        line(320,240,ta,d);

        delay(500);
        count++;

        setcolor(BLACK);
        outtextxy(CLOCKX-25, CLOCKY+5, timeNow);
    }
    getch();
}
```