**Lab 6: To convert from world coordinates to device coordinates (window to viewport transformation).**

**ALGORITHM:**

1.      Start

2.     Initialize graphics mode

3.     Draw a window

4.     Get the object( use drawpoly())

5.     Translate the object together with its window until the lower left corner of the window is at the origin

6.     object and window are scaled until the window has the dimensions of the viewport

7.     Translate the viewport to its correct position on the screen

8.     Display the contents inside the viewport.

**PROGRAM:**

#include<stdio.h>

#include<conio.h>

#include<dos.h>

#include<graphics.h>

#include<math.h>

 void main()

{

int xwmin,ywmin,xwmax,ywmax,xv1,yv1;

int xvmin,xvmax,yvmin,yvmax,xw,yw,xv,yv;

int gd=DETECT,gm;

initgraph(&gd,&gm,"");

printf("Enter the window coordinates xwmin,xwmax,ywmin,ywmax\n");

scanf("%d\t%d\t%d\t%d",&xwmin,&xwmax,&ywmin,&ywmax);

line(xwmin-25,xwmin-25,xwmin-25,ywmax+50);

line(xwmin-40,ywmax+25,xwmax+50,ywmax+25);

outtextxy(xwmin+5,ywmax+5,"Window");

line(xwmin,ywmin,xwmin,ywmax);

line(xwmin,ywmax,xwmax,ywmax);

line(xwmax,ywmax,xwmax,ywmin);

line(xwmax,ywmin,xwmin,ywmin);

 xvmax=xwmax/2;

xvmin=xwmin/2;

yvmin=ywmin/2;

yvmax=ywmax/2;

line(xvmin+275,xvmin+275,xvmin+275,yvmax+325);

line(xvmin+255,yvmax+315,xvmax+325,yvmax+315);

outtextxy(xvmin+305,yvmax+305,"Viewport");

line(xvmin+300,yvmin+300,xvmin+300,yvmax+300);

line(xvmin+300,yvmax+300,xvmax+300,yvmax+300);

line(xvmax+300,yvmax+300,xvmax+300,yvmin+300);

line(xvmax+300,yvmin+300,xvmin+300,yvmin+300);

xw=xwmin+50;

yw=ywmin+50;

putpixel(xw,yw,4);

xv1=((xvmax-xvmin)/(xwmax-xwmin))\*(xw-xwmin);

xv=xv1+xvmin;

yv1=((yvmax-yvmin)/(ywmax-ywmin))\*(yw-ywmin);

yv=yv1+yvmin;

putpixel(xv+325,yv+325,2);

getch();

closegraph();}

