Exp No. **4 2D Representation of 3 DOF Robot**

#include<iostream.h>

#include<graphics.h>

#include<conio.h>

include<stdio.h>

#include<math.h>

int lk[3];

int max\_lim[3]={120,100,80};

int min\_lim[3]={100,80,60};

float ang[3],grp\_ang,angle;

void header()

{

clrscr();

cleardevice();

printf("\n\n\t\t2D GRAPHICAL DISPLAY OF 3-DOF ROBOT ARM\n");

printf("\t\t====================================");

}

void input()

{

header();

gotoxy(60,6);

printf("enter the height from the base(between 100 to 120):");

do{

gotoxy(60,6);printf(" ") ;

gotoxy (60,6);scanf("%d",&lk[0]);

}

 while (lk[0]<100)\\(lk[0]>120));

ang[0]=1.57;

for(int i=1; i<3;i+)

{

 gotoxy(6,4+4\*i);

printf("Enter the length of link ");

printf("%d (Between %d to %d ): ",i,max\_lim[i],min\_lim[i]);

do{

gotoxy(60,4+4\*i);scanf("%d",&lk[i]));

}

while(lk[i]<min\_lim[i]\\(lk[i]>max\_lim[i]));

gotoxy(6,6+4\*i);

printf("Enter the link angle of link %d (Between 90 to 270): ",i);

do{

gotoxy(60,6+4\*i);printf(" "):

gotoxy(60,6+4\*i);scanf)"%f",&ang[i]);

}

while ((ang[i]<90)\\(ang[i]>270));

ang[i]=ang[i]\*3.14/180;

}

gotoxy(6,16)\_;

printf("Enter the angle of gripper (Between 150-210 in degrees)");

do {

gotoxy (60,16);printf(" ");

gotoxy(60,16);scanf("%f" , &grp\_ang);

}

 while((grp\_ang<90)\\(grp\_ang>150))&&(grp\_ang<210)));

grp\_ang=frp\_ang\*3.14/180;

}

 void draw()

{

int xtemp,ytemp;

int x1,y1,x2,y2;

int x1end,y1end,x2end,y2end;

int x=getmaxx()/2,xend;

int y=400,yend;

float prev\_ang=0.0;

float temp\_amg =ang [0];

header();

line(x-100,y,x+100,y);

circle(x,y,2);

for(int i=0;i<3;i)

{

temp\_ang=ang[i] + prev\_ang;

xend=x+lk[i]\*cos(temp\_ang);

yend=y-lk[i]\*sin(temp\_ang);

line(x,y,xend,yend);

circle(xend,yend,2);

if(i==y-lk[i]\*sin(temp\_ang);

line(x,y,xend,yend);

circle(xend,yend,2);

if(i==2){xtemp=x;ytemp=,angle=temp\_ang;}

x=send; y=yend;

prev\_ang=3.14+temp\_ang;

}

temp+ang=grp\_ang+prev\_ang;

xend=x+25\*cos(temp\_ang);

ysend=y-25\*sin(temp\_ang);

line(x,y,xend,yend);

x1=xtemp+(lk[2]-5)\*cos(angle);

y1=ytemp+(lk[2]-5)\*sin(angle);

x2=xtemp+(lk[2]+5)\*cos(angle);

y2=ytemp+(lk[2]+5)\*sin(angle);

x1end=x1+25\*cos(temp\_ang);

y1end=y1-25\*sin(temp\_ang);

x2end=x2+25\*cos(temp\_ang);

y2end=y2-25\*sin(temp\_ang);

line(x1end,y1end,x2end,y2end);

x1=x1+30\*cos(temp\_ang);

y1=y1-30\*sin(temp\_ang);

x2=x2+30\*cos(temp\_ang);

y2=y2-30\*sin(temp\_ang);

line(x1,y1,x1end,y1end);

line(x2,y2,x2end,y2end);

}

void main()

{

 int gdriver = DETECT,gmode;

 initgraph(&gdriver,&gmode,"c:\\tc\\bgi");

input();

draw();

getch();

closegraph();

}