

## 12.Bölüm

### Sayısal Çözümleme Örnekleri 1

```
*****
*** bölünmüş faklar tablosu*****
*****

#include<stdio.h>
#include<conio.h>
#include<math.h>
main()
{
float y,fx[100],f[100][100],x[100],c=1,p=0;
int n,i,j;
clrscr();
printf("n=");scanf("%d",&n);
printf("x=");scanf("%f",&y);
for(i=0;i<=n;i++)
{
printf("x(%d),f(%d) :",i,i);scanf("%f,%f",&x[i],&fx[i]);
}
for(i=1;i<=n;i++) f[1][i]=(fx[i]-fx[i-1])/(x[i]-x[i-1]);

for(i=2;i<=n;i++)
{
for(j=1;j<=(n-i+1);j++) f[i][j]=(f[i-1][j+1]-f[i-1][j])/(x[i-1+j]-x[j-1]) ;
}
p=fx[0];
for(i=0;i<=(n-1);i++)
{
c*=(y-x[i]);
p+=c*f[i+1][1];
}
for(i=1;i<=n;i++)
{
for(j=1;j<=n-i+1;j++)
{
gotoxy(i*10,n+4+j);printf("%f",f[i][j]);
}
}
gotoxy(1,2*n+9);printf("polinom degeri :%f",p);
getch();}
```

```

*****
*****gregory newton formulu *****
*****
#include<stdio.h>
#include<math.h>
#include<conio.h>
main()
{
float x0,x,df[100][100],p,c=1,h,s;
int i,j,n;
clrscr();
printf("n=");scanf("%d",&n);
printf("x,x0,h :");scanf("%f,%f,%f",&x,&x0,&h);
s=(x-x0)/h;
printf("s=%f\n",s);
getch();
for(i=0;i<=n;i++)
{
printf("df[0][%d]=",i);scanf("%f",&df[0][i]);
}

for(i=1;i<=n;i++)
for(j=0;j<=n-i;j++)
{
df[i][j]=df[i-1][j+1]-df[i-1][j];
}
p=df[0][0];
for(i=0;i<=n-1;i++)
{
c*=(s-i)/(i+1);
p+=c*df[i+1][0];
}
for (i=1;i<=n;i++)
{
gotoxy(i*11+1,n+7); printf("df[%d]",i);
for (j=0;j<=n-i;j++)
{
gotoxy(i*11,n+8+j);printf("%f",df[i][j]);
}
}
gotoxy(1,2*n+10); printf("polinomun deşeri:%f",p);
getch();
}

```

```

*****
/*INTERPOLASYON*/
*****

#include <stdio.h>
main()
{
int i,j,n;
float p=0,l[100];
float y,x[100],fx[100];
clrscr();
printf("n=");scanf("%d",&n);
printf("x=");scanf("%f",&y);
for(i=0;i<=n;++i)
{
printf("x(%d),fx(%d) :",i,i);scanf("%f,%f",&x[i],&fx[i]);
}
for(i=0;i<=n;i++)
{
l[i]=1;
for(j=0;j<=n;j++)
{
if(i!=j) l[i]*=(y-x[j])/(x[i]-x[j]);
}
p+=l[i]*fx[i];
}
printf("Polinom degeri=%f",p);
getch();
}

*****
/* denklem sistemleri ICIN BASIT ITERASYON YONTEMI*/
*****

#include<stdio.h>
#include<stdlib.h>
#include<math.h>
#define g1(a) (.5*cos(a))
#define g2(b) (.5*sin(b))
main()
{
float f1,f2,x0[3],x1[3],temp[3],eps;
int n=0,i;

```

```

clrscr();
for(i=1;i<=2;++i)
{
printf("x0(%d)=",i);scanf("%f",&x0[i]);
}
printf("eps=");scanf("%f",&eps);
do
{
x1[1]=g1(x0[2]);
x1[2]=g2(x0[1]);
temp[1]=x0[1];temp[2]=x0[2];
x0[1]=x1[1];
x0[2]=x1[2];
f1=fabs(x1[1]-temp[1]);
f2=fabs(x1[2]-temp[2]);
n++;
}while(max(f1,f2)>eps);
printf("adım sayısındaki n",n);
printf("kok=%f,%f",x1[1],x1[2]);
getch();
}

```

\*\*\*\*\*

Üç boyutlu grafik çizen program

\*\*\*\*\*

```

# include <graphics.h>
# include <stdio.h>
# include <math.h>
# include <dos.h>

```

```

main ()
{
double yy;
int y,artim,j,i,x;
double a[21][21];
void gotoxy(int a, int b);
int graphdriver=DETECT,graphmode;
initgraph(&graphdriver,&graphmode,"");
setbkcolor(0);
settextstyle(1,0,5);
outtextxy(1,1,"GRAFİK PROGRAMI");
{
for (j=-10;j<10;j++)

```

```

{
for (i=-10;i<10;i++)
{
yy=200+sin(j)*cos(i)*12;
a [j+11] [i+11]=yy;
}
}
}
{
setcolor(2);
for (j=1;j<20;j++)
{
for (i=1;i<20;i++)
{
artim=a[i][j];
x=(i*10)+50+(j*5);
y=(j*4)+30+artim/1.1;
if (i==1)
{
moveto(x,y);
line(x,y,x,y);
}
else
lineto(x,y);
}
}
}
setcolor(4);
for (i=1;i<20;i++)
{
for (j=1;j<20;j++)
{
artim=a[i][j];
x=(i*10)+50+(j*5);
y=(j*4)+30+artim/1.1;
if (j==1)
{
moveto(x,y);
line(x,y,x,y);
}
else
lineto(x,y);
}
}
}

```

```
    }  
  }  
  getch();cleardevice();  
  closegraph();
```