Zadaci:

21. Program koji učitava i štampa matricu formata mxn ,i štampa niz koji se sastoji od maksimuma svake vrste.
22. Program koji učitava matricu A ,i štampa transponovanu matricu matrice A i niz sa maksimumima transponovane matrice.
23. Za unešeni red matrice n, štampa matricu "zmija".Npr : za n=4 štampaće

```
 1   2   3   4
12  13  14   5
11  16  15   6
10   9   8   7
```

24.Program koji učitava matricu sastavljenu od jedinica i nula i štampa koliko ima polja nula(polje nule čine nule koje su joj susjedne iznad,ispod,lijevo ili desno).Promjer polja:

1 1 0 0 1
1 1 0 1 1

25.Program koji učitava polinom stepena n sa koeficijentima $a_0,...,a_n$ i za unijetu vrijednost x računa vrijednost polinoma korišćenjem Hornerove šeme.

Rešenja:

21.zadatak

```pascal
 program zad1;
type
        niz = array[1..20] of integer;
        matrica = array[1..20] of niz;
var
        i, m, n : integer;
        a : matrica;
        b : niz;
procedure unosmatrice(var m, n : integer; var x : matrica);
var
        i, j : integer;
begin
        write('Unesi dimenzije matrice: ');
        readln(m, n);
        for i := 1 to m do
                for j := 1 to n do
                        begin
                                write('x[', i, ', ', j, '] = ');
                                readln(x[i, j]);
                        end;
end;

procedure stampamatrice(m, n : integer; x : matrica);
var
        i, j : integer;
begin
        for i := 1 to m do
                begin
                        for j := 1 to n do
                                begin
                                        write(x[i, j] : 5);
```

```
                    end;
            writeln;
            writeln;
        end;
end;

function maxniza(n : integer; x : niz) : integer;
var
        i, max : integer;
begin
        max := x[1];
        for i := 2 to n do
                begin
                        if (x[i] > max) then
                                begin
                                        max := x[i];
                                end;
                end;
        maxniza := max;
end;

begin
        unosmatrice(m, n, a);
        for i := 1 to m do
                begin
                        b[i] := maxniza(n, a[i]);
                end;
        write('Za matricu: ');
        writeln;
        stampamatrice(m, n, a);
        write('Dobija se niz(ciji su clanovi maksimumi vrsta): ');
        for i := 1 to m do
                begin
                        write(b[i] : 5);
                end;
        readln;
end.
```

22. zadatak

```
program zad2;
type
        niz = array[1..20] of integer;
        matrica = array[1..20] of niz;
var
        i, m, n, p, q : integer;
        a, x : matrica;
        b : niz;
procedure unosmatrice(var m, n : integer; var x : matrica);
var
        i, j : integer;
begin
        write('Unesi dimenzije matrice: ');
```

```pascal
        readln(m, n);
        for i := 1 to m do
                begin
                        for j := 1 to n do
                                begin
                                        write('x[', i, ',', j, '] = ');
                                        readln(x[i, j]);
                                end;
                end;
end;

procedure stampamatrice(m, n : integer; x : matrica);
var
        i, j : integer;
begin
        writeln;
        for i := 1 to m do
                begin
                        for j := 1 to n do
                                begin
                                        write(x[i, j] : 5);
                                end;
                        writeln;
                        writeln;
                end;
end;

procedure transponovanje(var m, n : integer; a : matrica; var p, q : integer; var b : matrica);
var
        i, j : integer;
begin
        p := n;
        q := m;
        for i := 1 to p do
                begin
                        for j := 1 to q do
                                begin
                                        b[i, j] := a[j, i];
                                end;
                end;
end;

function maxniza(n : integer; x : niz) : integer;
var
        i, max : integer;
begin
        max := x[1];
        for i := 2 to n do
                begin
                        if (x[i] > max) then
                                begin
```

```
                                        max := x[i];
                                    end;
                        end;
            maxniza := max;
    end;

begin
        unosmatrice(m, n, a);
        transponovanje(m, n, a, p, q, x);
        for i := 1 to p do
                begin
                        b[i] := maxniza(q, x[i]);
                end;
        write('Za matricu: ');
        stampamatrice(m, n, a);
        write('Transponovana je: ');
        stampamatrice(p, q, x);
        write('Dobija se niz: ');
        for i := 1 to p do
                begin
                        write(b[i] : 5);
                end;
        writeln;
        readln;
end.
```

23. zadatak

```
        program zmija;
type
        niz = array[1..20] of integer;
        matrica = array[1..20] of niz;
var
        i, j, br, bk, n, k, l, l1 : integer;
        a : matrica;
procedure stampamatrice( n : integer; x : matrica);
var
        i, j : integer;
begin
        writeln;
        for i := 1 to n do
                begin
                        for j := 1 to n do
                                begin
                                        write(x[i, j] : 5);
                                end;
                        writeln;
                        writeln;
                end;
end;

begin
        write('Unesi dimenzije kvadratne matrice: ');
```

```
        readln(n);
        br := 1;
        bk := n div 2;
        i := 1;
        j := 1;
        l := n - 1;
        for k := 1 to bk do
                begin
                        j := k;
                        for l1 := 1 to l do
                                begin
                                        a[k, j] := br;
                                        j := j + 1;
                                        br := br + 1;
                                end;
                        i := k;
                        for l1 := 1 to l do
                                begin
                                        a[i, n + 1 - k] := br;
                                        i := i + 1;
                                        br := br + 1;
                                end;
                        j := n + 1 - k;
                        for l1 := 1 to l do
                                begin
                                        a[n + 1 - k, j] := br;
                                        j := j - 1;
                                        br := br + 1;
                                end;
                        i := n + 1 - k;
                        for l1 := 1 to l do
                                begin
                                        a[i, k] := br;
                                        i := i - 1;
                                        br := br + 1;
                                end;
                        l := l - 2;
                end;
        if (n mod 2 = 1) then
                begin
                        a[n div 2 + 1, n div 2 + 1] := n * n;
                end;
        stampamatrice(n, a);
        readln;
end.
```

24.zadatak
```
 {polje je sastavljeno od susjednih el. istih vrijednosti(ista vrsta ili kolona}
{za zadatu matricu mxn popunjenu sa 1 i 0 prebrojati koliko ima polja popunjenih sa 0}
program polje;
type
        niz = array[1..20] of integer;
```

```
        matrica = array[1..20] of niz;
var
  m,n,i,j,broj,max:integer;
  a:matrica;

procedure unosmatrice(var m, n : integer; var x : matrica);
var
        i, j : integer;
begin
        write('Unesi dimenzije matrice: ');
        readln(m, n);
        for i := 1 to m do
                for j := 1 to n do
                        begin
                                write('x[', i, ', ', j, '] = ');
                                readln(x[i, j]);
                        end;
end;

procedure stampamatrice(m, n : integer; x : matrica);
var
        i, j : integer;
begin
        for i := 1 to m do
                begin
                        for j := 1 to n do
                                begin
                                        write(x[i, j] : 5);
                                end;
                        writeln;
                        writeln;
                end;
end;
procedure oznaci(broj:integer;i,j:integer;var max);
var
        d:integer;
begin
    a[i,j]:=broj;
    d:=0;
    if (j<n) and (a[i,j+1]=0) then begin oznaci(broj,i,j+1);d:=d+1;if d>max then max:=d;end;
    if (i<m) and (a[i+1,j]=0) then begin oznaci(broj,i+1,j);d:=d+1;if d>max then max:=d;end;
    if (j>1) and (a[i,j-1]=0) then begin oznaci(broj,i,j-1);d:=d+1;if d>max then max:=d;end;
    if (i>1) and (a[i-1,j]=0) then begin oznaci(broj,i-1,j);d:=d+1;if d>max then max:=d;end;
end;

begin
    unosmatrice(m,n,a);
    stampamatrice(m,n,a);
    max:=0;
    broj:=1;
    for i:=1 to m do
```

```
          for j:=1 to n do
            if(a[i,j]=0)then
               begin
                  broj:=broj+1;
                  oznaci(broj,i,j,max);
               end;
     writeln('_____');
     writeln;
     stampamatrice(m,n,a);
     writeln('Broj polja je: ',broj-1);
     writeln('Najvece polje je ima clanova: ',max);
     readln;
end.
```

25.zadatak

```
program polinomi_hornerova;
type
tacka = record
     x,y:real;
     end;
polinom = record
     stepen:integer;
     koef:array[0..100]of real;
     end;
var
     t:tacka;x:real;
     a:polinom;
procedure unos_polinoma(var a:polinom);
var
     i:integer;
begin
     write('Stepen polinoma je: ');
     readln(a.stepen);
     for i:=0 to a.stepen do
       begin
         write('koeficijent ',i,' je: ');
         readln(a.koef[i]);
       end;
end;
procedure stampa_polinoma(a:polinom);
var
     i:integer;
begin
     writeln('Stepen polinoma je ',a.stepen);
     for i:=0 to a.stepen do
       begin
            write(a.koef[i]:6:2);
       end;
     writeln;
end;
function horner(a:polinom;x:real):real;
var
```

```
        p:real;i:integer;
begin
    p:=a.koef[a.stepen]*x;
    for i:=a.stepen-1 downto 1 do
        p:=(p+a.koef[i])*x;
    p:=p+a.koef[0];
    horner:=p;
end;
begin
    unos_polinoma(a);
    write('x= ');
    readln(x);
    writeln;
    stampa_polinoma(a);
    writeln;
    write('za vrijednost ',x:6:2);
    write(' polinom ima vrijednost: ',horner(a,x):6:2);
    readln;
end.
```