

### Ek.3. Çeşitli Algoritma Örnekleri

#### 1) Algoritma: Sonlu bir dizideki en büyük elemanı bulan Algoritma

```

procedure max (a1, a2, ....., an : integers )
max := a1
for i := 2 to n
  if max < ai then max := ai
{ max en büyük eleman }

```

#### 2) Algoritma: Euclidean Algoritma

```

procedure gcd(a, b : positive integers )
x := a
y := b
while y ≠ 0
begin
  r := x mod y
  x := y
  y := r
end { gcd ( a ,b ) is x }

```

#### 3) Algoritma : Constructing Base b Expansions

```

procedure base b expansion (n : positive integer )
q := n
k := 0
while q ≠ 0
begin
  ak := q mod b
  q := [ q / b ]
  k := k + 1
end { the base b expansion of n is ( ak-1 ..... a1 a0 )b }

```

#### 4) Algoritma:Tamsayıların toplamı

```

procedure add(a, b : positive integer )
{ the binary expansions of a and b are ( an-1, an-2, ....., a1a0 )2
  and ( bn-1, bn-2, ....., b1b0 )2, respectively }
c := 0
for j := 0 to n - 1
begin
  d := [ ( aj + bj + c ) / 2 ]
  sj := aj + bj + c - 2d
  c := d
end
sn := c
{ the binary expansion of the sum is ( sn sn-1 ..... s0 )2 }

```

**5) Algoritma: Tamsayıların çarpımı**

```

procedure multiply(a ,b : positive integer )
{ the binary expansions of a and b are (  $a_{n-1}, a_{n-2}, \dots, a_1a_0$  )2
  and (  $b_{n-1}, b_{n-2}, \dots, b_1b_0$  )2, respectively }
for j : = 0 to n - 1
begin
  if  $b_j = 1$  then  $c_j := a$  shifted j places
  else  $c_j := 0$ 
end
{  $c_0, c_1, \dots, c_{n-1}$  are the partial products }
p : = 0
{ p is the value of a.b }

```

**6) Algoritma: Matris çarpımı**

```

procedure matrix multiplication(A ,B : matrices )
for i : = 1 to m
begin
  for j : = 1 to n
  begin
     $c_{ij} := 0$ 
    for q : 1 to k
       $c_{ij} := c_{ij} + a_{iq} b_{qj}$ 
    end
  end {  $C = [c_{ij}]$  is the product of A and B }

```

**7) Algoritma: Boolean çarpımı**

```

procedure Boolean Product (A ,B : zero-one matrices )
for i : = 1 to m
begin
  for j : = 1 to n
  begin
     $c_{ij} := 0$ 
    for q : 1 to k
       $c_{ij} := c_{ij} \vee a_{iq} \wedge b_{qj}$ 
    end
  end {  $C = [c_{ij}]$  is the Boolean product of A and B }

```