Name:Amit Kumar **Assignment 2** Roll No:13096

Q1:

```
Given: H[0,n-1]
Stack s=null
push(s,createNode( 0, 0, H[0]))
M.height=0, M.start=0, M.end=-1 // we want initial max area to be zero
For i=1 to n-1 Do
        a=Top(s)
        While a.height>=H[i] && !Empty(s) Do
                If Area(a) > Area(M) Then
                        M=a
                b=Pop(s)
                If Not Empty(s) Then
                        c=Pop(s)
                        c.end=b.end
                        push(s,c)
                a=Top(s)
        End While
        If Empty(s) Then
                Push(s,createNode(0,i,H[i]))
        Else
                b=Top(s)
                Push(s,createNode(b.start+1,I,H[i]))
End For
While !Empty(s) Do
        a=Pop(s)
        If Not Empty(s) Then
                b=Pop(s)
                b.end=a.end
                push(s,b)
        If Area(a) > Area(M) Then
                M=a
End While
print Maximum area is Area(M) corresponding to start point M.start and end point M.end

Function Area(node)
        return (node.end - node.start + 1) * (node.height)

Struct node contains start, end , height
Function createNode(i,j,k) is
        n=new node()
        n.start=I, n.end=j, n.height
        return n
```

Q2:

```
Given A[0,n-1]
T=Null, H=Null
Enqueue(T,createNode(k-1,A[k-1])
For i from k-2 to 0 do
        If A[i]>Top(T) Then
                Enqueue(T,createNode(i,A[i]))

print Top(T)  // print maximum height of first k buildings
For i from k to n-1 Do
        a=Top(T)
        If a.index = i-k Then
                Dequeue(T)
        While !Empty(H) Do
                If(Top(H).height =< A[i]) Then
                        Dequeue(H)
                Else
                        break
        Equeue(H,createNode(i,A[i]))
        print Top(T)  // this is the maximum height out k building from i-k+1 to I

Struct node{
        height,index
}
Function createNode(i,j){
        n=new node()
        n.index=i
        n.height=j
        return n
}
```