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PART-1

Q1 (a)

i. mid = lbound + (upbound - lbound)/2;

ii.a return mid;

iv.a lbound = mid+1 ;

(b)

vi.a upbound = mid - 1 ;

iv.a lbound = mid+1 ;

(c)

d. while (lbound <= upbound){

f. mid = lbound + (upbound - lbound)/2;

(d)

i. mid = lbound + (upbound - lbound)/2

ii.a return mid

iv else if(lis[mid] < key)

(Q2) (b)

c. for(int k=j+1; k<=list.length-1; k++)

c.i.a.i min=k;

(b)

c.i.a if (list[k]<list[min]

(c)

a. for(int j=0; j<list.length-1; j++)

c. for(int k=j+1; k<=list.length-1; k++)

a. if (list[k]<list[min]

(d)

a. if(list[k]<list[min])

(Q3)

Iteration	1st	2nd	3rd	4th	5th	6th
First	1	7	7	7		
Last	11	11	8	6		
Mid	6	9	7	6		
Last[Mid]	L	Q	M	L		
Key = P	P	P	P	P		

Not Found

PART – II

NAME: SHAH RAZA REG NO: 18PWCSE1658

21) (a)

1. WINDOW next(WINDOW w, LIST *list)
2. WINDOW previous(WINDOW w, LIST *list)

3. WINDOW next(WINDOW w, LIST *list)

```
{
    if (w == last(list))
        return(end(list));
    else if (w == end(list)
        error("can't find next after
        end of list");
    else
        return(w+1);
}
```

1. WINDOW previous(WINDOW w, LIST *list)

```
{
    if(w != first(list))
    {
        return(w-1);
    }
    else
    {
        error(can't find previous before
        first element of list");
        return(w);
    }
}
```

(b)
```
typedef struct {
        int n;
        float f;
        char *s;
} ELEMENT;
```

```
typedef struct node *TNODE;
```

```
typedef struct node {
        ELEMENT element;
        TNODE next;
        TNODE previous;
} NODE;
```

```
typedef TNODE LIST;
typedef TNODE WINDOW;
```

1. `WINDOW next(WINDOW w, LIST *list)`
2. `WINDOW previous(WINDOW w, LIST *list)`

3.
```
WINDOW next(WINDOW w, LIST *list)
{
        if (w == last(list))
                return (end(list));
        else if (w == end(list))
                error("can't find next after
                end of list");
        else
                return (w+1);
}
```

4.

```
WINDOW previous(WINDOW w, LIST *list)
{
    if (w != first(list)
        return (w-1);
    else
    {
        error("can't find previous before
        first element of list");
        return w;
    }
}
```

Q2(a)

For n>2

```
int Gen_Sequence(int n)
{
    static int a=0, b=1, c=2; int G;          2
    if (n==0)                                 1
        return 0;                             0
    else if (n==1)                            1
        return 1;                             0
    else if(n==2)                             1
        return 2;                             0
    else
    { for(int G=(c+b)*a; G<
      a= b;
      b= c;
      for(int i=0; i<n; i++)                  n+1
      {
          a= b;
          b= c;
          G= (c+b)*a;                         4(n)
          c= G;
      }
      return G;                               1
}
```

Q2 (b)

$$T(n) = 2+1+1+n+1+4n+1$$
$$= 4n+n+6$$
$$= 5n+6$$
$$T(n) = c_1 n + c_2$$

Complexity = $O(n)$

(Q3)

Initial Array	37	5	27	57	19
After 1st swap	37	5	27	19	57
After 2nd swap	19	5	27	37	57
After 3rd swap	19	5	27	37	57
After 4th swap	5	19	27	37	57
After 5th swap	5	19	27	37	57