Examples on operation of array

Example

Following program traverses and prints the elements of an array:

```
#include <stdio.h>
main() {
   int LA[] = {1,3,5,7,8};
   int item = 10, k = 3, n = 5;
   int i = 0, j = n;
   printf("The original array elements are :\n");
   for(i = 0; i<n; i++) {
      printf("LA[%d] = %d \n", i, LA[i]);
   }
}
```

When we compile and execute the above program, it produces the following result –

Output

```
The original array elements are :
LA[0] = 1
LA[1] = 3
LA[2] = 5
LA[3] = 7
LA[4] = 8
```

Insertion Operation

implementation of the above algorithm −

```
#include <stdio.h>

main() {
   int LA[] = {1,3,5,7,8};
   int item = 10, k = 3, n = 5;
   int i = 0, j = n;

   printf("The original array elements are :\n");

   for(i = 0; i<n; i++) {
      printf("LA[%d] = %d \n", i, LA[i]);
   }
```

Examples on operation of array

```
  n = n + 1;

  while( j >= k) {
    LA[j+1] = LA[j];
    j = j - 1;
  }

  LA[k] = item;

  printf("The array elements after insertion :\n");

  for(i = 0; i<n; i++) {
    printf("LA[%d] = %d \n", i, LA[i]);
  }
}
```

When we compile and execute the above program, it produces the following result –

Output
The original array elements are :
LA[0] = 1
LA[1] = 3
LA[2] = 5
LA[3] = 7
LA[4] = 8
The array elements after insertion :
LA[0] = 1
LA[1] = 3
LA[2] = 5
LA[3] = 10
LA[4] = 7
LA[5] = 8

Deletion Operation

Deletion refers to removing an existing element from the array and re-organizing all elements of an array.

Algorithm

Examples on operation of array

Consider **LA** is a linear array with **N** elements and **K** is a positive integer such that **K<=N**. Following is the algorithm to delete an element available at the K^{th} position of LA.

1. Start
2. Set J = K
3. Repeat steps 4 and 5 while J < N
4. Set LA[J] = LA[J + 1]
5. Set J = J+1
6. Set N = N-1
7. Stop

Example

Following is the implementation of the above algorithm −

```
#include <stdio.h>

void main() {
  int LA[] = {1,3,5,7,8};
  int k = 3, n = 5;
  int i, j;

  printf("The original array elements are :\n");

  for(i = 0; i<n; i++) {
    printf("LA[%d] = %d \n", i, LA[i]);
  }

  j = k;

  while( j < n) {
    LA[j-1] = LA[j];
    j = j + 1;
  }

  n = n -1;

  printf("The array elements after deletion :\n");

  for(i = 0; i<n; i++) {
    printf("LA[%d] = %d \n", i, LA[i]);
```

Examples on operation of array

```
   }
}
```

When we compile and execute the above program, it produces the following result –

Output
The original array elements are :
LA[0] = 1
LA[1] = 3
LA[2] = 5
LA[3] = 7
LA[4] = 8
The array elements after deletion :
LA[0] = 1
LA[1] = 3
LA[2] = 7
LA[3] = 8

Search Operation

You can perform a search for an array element based on its value or its index.

Algorithm

Consider **LA** is a linear array with **N** elements and **K** is a positive integer such that **K<=N**. Following is the algorithm to find an element with a value of ITEM using sequential search.

1. Start
2. Set J = 0
3. Repeat steps 4 and 5 while J < N
4. IF LA[J] is equal ITEM THEN GOTO STEP 6
5. Set J = J +1
6. PRINT J, ITEM
7. Stop

Example

Following is the implementation of the above algorithm −

```
#include <stdio.h>

void main() {
   int LA[] = {1,3,5,7,8};
```

Examples on operation of array

```
  int item = 5, n = 5;
  int i = 0, j = 0;

  printf("The original array elements are :\n");

  for(i = 0; i<n; i++) {
    printf("LA[%d] = %d \n", i, LA[i]);
  }

  while( j < n){
    if( LA[j] == item ) {
      break;
    }

    j = j + 1;
  }

  printf("Found element %d at position %d\n", item, j+1);
}
```

When we compile and execute the above program, it produces the following result –

Output
The original array elements are :
LA[0] = 1
LA[1] = 3
LA[2] = 5
LA[3] = 7
LA[4] = 8
Found element 5 at position 3