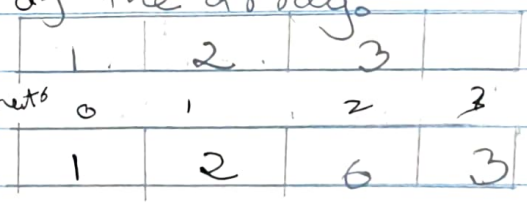
Assignment 1

Title - Write a program for Implementation and deletion in a specific position in an Array using Functions

Aim - Use arrays and create functions to add/remove ~~and print data~~ data from specific positions in an array and print the entire data.

Theory

For inserting an element into an array in a certain position, we need to move the element at that position and all the following ones one space forward (increase their index by 1) then place the element into the array at the freed up position. We use a for loop starting at the position where the element is to be inserted and ending at the end of the array.



In this case, we have taken input of the index and the number to be inserted.

For deletion, we need to move the elements in the array one space back inorder to create an empty space in the end of the array. The loop starts from the index and ends at the end of the array.

a[4] =

0	1	2	3
11	22	33	44

Delete element at a[0]

a[4] =

22	33	44	

To display an array, a for loop from 0 to the end is used (old portion)

Conclusion

Both insert and delete functions change the number of non-empty spaces in an array and both shift the necessary elements to produce the desired outputs. They are fundamental operations and can be added upon in future classes. They both are affected by the number of elements in the array and are size dependent.

```
#include <stdio.h>
int a = 1;
int count = 3;
int arr[28];
int i = 0;
int pos, num, temp;

void insert();
void del();
void display();

void main()
{
   printf("Enter the numbers\n");
   for (int i = 0; i<count; i++){
      scanf("%d", &arr[i]);
   }
   while (a>0)
   {
      printf("1-Insert\n2-Delete\n3-Display\n4-Exit\n");
      scanf("%d", &i);
      switch(i)
      {
         case 1:
            insert();
            break;
         case 2:
            del();
            break;
         case 3:
            display();
            break;
         case 4:
            printf("Exit\n");
            return;
         default:
            printf("Invalid Choice\n");
      }
   }
}
void insert(){
   printf("Insert\n");
   printf("Enter the number: ");
   scanf("%d", &num);
   printf("Enter the position: ");
   scanf("%d", &pos);
   count += 1;
   if (pos < 0 || pos > count)
   {
      printf("Error");
      return;
   }
```

```
    temp = arr[pos];
    arr[pos] = num;
    for(int i = pos; i < count; i++)
    {
        int xyz = arr[i+1];
        arr[i+1] = temp;
        temp = xyz;
    }
}
void del()
{
    printf("Delete\n");
    printf("Enter the position: ");
    scanf("%d", &pos);
    count -= 1;
    for (int i = pos; i<count;i++)
    {
        arr[i] = arr[i+1];
    }
}
void display()
{
    printf("Display\n");
    for(int i = 0;i < count; i++)
    {
        printf("%d, ", arr[i]);
    }
    printf("\n");
}
```

Insertion

```
Enter the numbers
3
4
5
1-Insert
2-Delete
3-Display
4-Exit
3
Display
3, 4, 5,
1-Insert
2-Delete
3-Display
4-Exit
2
Delete
Enter the position: 1
1-Insert
2-Delete
3-Display
4-Exit
3
Display
3, 5,
```

Deletion

```
1-Insert
2-Delete
3-Display
4-Exit
3
Display
3, 5,
1-Insert
2-Delete
3-Display
4-Exit
1
Insert
Enter the number: 66
Enter the position: 1
1-Insert
2-Delete
3-Display
4-Exit
3
Display
3, 66, 5,
1-Insert
2-Delete
3-Display
4-Exit
```