

1) Write a c program to search particular element in a list using linear search?

```
#include <stdio.h>
int main(){
    int n,c,array[100],search;
    printf("enter the number of elements in an array :");
    scanf("%d",&n);

    printf("enter %d numbers\n",n);
    for(c=0;c<n;c++){
        scanf("%d",&array[c]);
        printf("enter number to search\n");
        scanf("%d",&search);
        for(c=0;c<n;c++){
            if (array[c]==search){
                printf("%d is present at position %d\n ",search,c+1);
                break;
            }
        }
        if(c==n){
            printf("element is not available");
        }
    }
    return 0;
}
```

OUTPUT:

```
enter the number of elements in an array :5
enter 5 numbers
45
58
90
4
3
enter number to search
3
3 is present at position 5
```

```
enter the number of elements in an array :5
enter 5 numbers
45
58
90
4
3
enter number to search
2
element is not available
```

2) Write a c program to search an element using binary search?

```
#include <stdio.h>
int main(){
    int arr[100],a,low,high,i,n;
    printf("enter the size of array:\n");
    scanf("%d",&n);

    printf("enter the element:\n");
    for(i=0;i<n;i++){
        scanf("%d",&arr[i]);
    }
    printf("enter the element to search:\n");
    scanf("%d",&a);
    low=0;
    high=n-1;
    int mid=(low+high)/2;
    while(low<=high)
    {
        if(arr[mid]<a)
            low=mid+1;
        else if(arr[mid]==a)
        {
            printf("%d is found at position %d",a,mid+1);
            break;
        }
        else
        {
            high = mid-1;
            mid = (low +high)/2;
        }
    }
    if(low>high)
    {
        printf("%d is not available in given array",a);
    }
}
```

OUTPUT:

```
enter the size of array:
5
enter the element:
23
45
67
80
45
enter the element to search:
67
67 is found at position 3
```

3) Write a c program to calculate sum of element in an array?

```
#include <stdio.h>
int main()
{
    int arr[100],n,c,sum=0;
    printf("enter the size of an array\n");
    scanf("%d",&n);

    printf("enter the elements\n");
    for(c=0;c<n;c++){
        scanf("%d",&arr[c]);
    }
    for(c=0;c<n;c++){
        sum=sum+arr[c];
    }
    printf("the sum of an array is %d\n",sum);
    return 0;
}
```

OUTPUT:

```
enter the size of an array
5
enter the elements
1
2
3
4
5
the sum of an array is 15
```

4) Write a c program to merge two arrays?

```
#include <stdio.h>
int main()
{
    int c,n,m,arr1[100],arr2[100],k,merge[100];
    printf("enter the size of first array\n");
    scanf("%d",&n);
    printf("enter the elements:\n");
    for(c=0;c<n;c++){
        scanf("%d",&arr1[c]);
        merge[c]=arr1[c];
    }
    k=c;
    printf("enter the size of second array\n");
    scanf("%d",&m);
    printf("enter the elements:\n");
    for(c=0;c<m;c++){
        scanf("%d",&arr2[c]);
        merge[k]=arr2[c];
        k++;
    }
    printf("\n new array after merging is:\n ");
    for(c=0;c<k;c++)
        printf(" %d",merge[c]);
    return 0;
}
```

OUTPUT:

```
enter the size of first array
3
enter the elements:
1
2
3
enter the size of second array
4
enter the elements:
5
6
7
8

new array after merging is:
1 2 3 5 6 7 8
```

5) Write a c program to perform insertion, deletion of elements in the middle of an array?

```
#include <stdio.h>
int main()
{
    int c,i,j,r,arr[100],c;
    printf("enter the size of first array\n");
    scanf("%d",&r);
    printf("enter the elements:\n");
    for(c=0;c<r;c++)
    {
        scanf("%d",&arr[c]);
    }
    printf("enter the element to be inserted:\n");
    scanf("%d",&i);
    c=r/2;
    if(c>r){
        printf("position is not within the array \n");
        return 0;
    }
    else{
        for(j=r-1;j>=c;j--)
        {
            arr[j+1]=arr[j];
        }
        arr[c]=i;
        for(j=0;j<r+1;j++){
            printf("%d",arr[j]);
            printf("\n");
        }
        int k=r/2;
        printf("enter the position to delete:\n");
        scanf("%d",&k);
        for(j=k;j<r;j++){
            arr[j]=arr[j+1];
        }
        for(j=0;j<r;j++){
            printf("%d",arr[j]);
            printf("\n");
        }
    }
}
```

```
enter the size of first array
5
enter the elements:
1
2
3
4
5
enter the element to be inserted:
6
1
2
6
3
4
5
enter the position to delete:
4
12635
```

6) Write a c program to reverse a string?

```
#include <stdio.h>
#include <string.h>

int main() {
    char s[100];
    printf("enter a string to reverse:\n");
    gets(s);

    strrev(s);
    printf("reverse of the string :%s",s);
    return 0;
}
```

```
enter a string to reverse:
rohith
reverse of the string :htihor
```

7) Write a c program to check the given string is a palindrome or not?

```
#include <stdio.h>
#include <string.h>

int main(){
    int i,n,c=0;
    char s[1000];
    printf("enter the string :\n");
    gets(s);
    n=strlen(s);

    for(i=0;i<n/2;i++){
        if (s[i]==s[n-i-1])
            c++;
    }
    if(c==i)
        printf("string is palindrome");
    else
        printf("string is not palindrome");
    return 0;
}
```

```
enter the string :
malayalam
string is palindrome
```

8) Write a c program to search a particular character in a string?

```

#include <stdio.h>
#include <string.h>

int main() {
    char inputString[100];
    char searchChar;
    int found = 0;

    printf("Enter a string: ");
    fgets(inputString, sizeof(inputString), stdin);

    printf("Enter the character to search for: ");
    scanf(" %c", &searchChar);

    inputString[strcspn(inputString, "\n")] = '\0';

    int i = 0;
    while (inputString[i] != '\0') {
        if (inputString[i] == searchChar) {
            found = 1;
            break;
        }
        i++;
    }
    if (found) {
        printf("The character '%c' was found in the string.\n", searchChar);
    } else {
        printf("The character '%c' was not found in the string.\n", searchChar);
    }

    return 0;
}

```

```

Enter a string: mitstuha
Enter the character to search for: s
The character 's' was found in the string.

```

- 9) Write a c program to count number of times a,e,l,o,u present in the give string?

```

#include <stdio.h>
#include <string.h>
#include <ctype.h>

int main() {
    char inputString[100];
    int vowelCounts[5] = {0};
    int i;

    printf("Enter a string: ");
    fgets(inputString, sizeof(inputString), stdin);

    for (i = 0; inputString[i] != '\0'; i++) {
        char c = tolower(inputString[i]);
        if (c == 'a') vowelCounts[0]++;
        else if (c == 'e') vowelCounts[1]++;
        else if (c == 'i') vowelCounts[2]++;
        else if (c == 'o') vowelCounts[3]++;
        else if (c == 'u') vowelCounts[4]++;
    }

    printf("Vowel counts (a e i o u):\n");
    for (i = 0; i < 5; i++) {
        printf("%d ", vowelCounts[i]);
    }
    printf("\n");

    return 0;
}

```

```

Enter a string: bannu
Vowel counts (a e i o u):
1 0 0 0 1

```

10) Write a c program to perform matrix multiplication?

```
#include <stdio.h>

void matrixMultiplication(int A[][3], int B[][3], int result[][3], int rowsA, int colsA, int colsB)
{
    int i, j, k;
    for (i = 0; i < rowsA; i++) {
        for (j = 0; j < colsB; j++) {
            result[i][j] = 0;
            for (k = 0; k < colsA; k++) {
                result[i][j] += A[i][k] * B[k][j];
            }
        }
    }
}

void printMatrix(int matrix[][3], int rows, int cols) {
    int i, j;
    for (i = 0; i < rows; i++) {
        for (j = 0; j < cols; j++) {
            printf("%d\t", matrix[i][j]);
        }
        printf("\n");
    }
}

int main() {
    int A[3][3] = {{1, 2, 3},
                  {4, 5, 6},
                  {7, 8, 9}};
    int B[3][3] = {{6, 8, 7},
                  {5, 4, 3},
                  {2, 1, 1}};
    int result[3][3];

    int rowsA = 3, colsA = 3, colsB = 3;

    matrixMultiplication(A, B, result, rowsA, colsA, colsB);

    printf("Matrix A:\n");
    printMatrix(A, rowsA, colsA);

    printf("\nMatrix B:\n");
    printMatrix(B, colsB, colsB);

    printf("\nResult of Matrix Multiplication (A * B):\n");
    printMatrix(result, rowsA, colsB);

    return 0;
}
```

```
Matrix A:
1      2      3
4      5      6
7      8      9

Matrix B:
9      8      7
6      5      4
3      2      1

Result of Matrix Multiplication (A * B):
30     24     18
84     69     54
138    114     90
```

11) Write a c program to perform all string manipulation operation in a string?

```

#include <stdio.h>
#include <string.h>
#include <ctype.h>

int main() {
    char str1[100], str2[100];
    int choice, i;

    printf("Enter the main string: ");
    gets(str1);

    printf("Enter the secondary string: ");
    gets(str2);

    do {
        printf("\nMenu:\n1. Length\n2. Concatenate\n3. Compare\n4. Reverse\n5. Uppercase\n6. Lowercase\n0. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Length: %d\n", strlen(str1));
                break;

            case 2:
                strcat(str1, str2);
                printf("Concatenated: %s\n", str1);
                break;

            case 3:
                if (strcmp(str1, str2) == 0) printf("Equal\n");
                else printf("Not equal\n");
                break;

            case 4:
                for (i = strlen(str1) - 1; i >= 0; i--) putchar(str1[i]);
                printf("\n");
                break;

            case 5:
                for (i = 0; str1[i]; i++) putchar(toupper(str1[i]));
                printf("\n");
                break;

            case 6:
                for (i = 0; str1[i]; i++) putchar(tolower(str1[i]));
                printf("\n");
                break;

            case 0:
                printf("Exiting...\n");
                break;

            default:
                printf("Invalid choice!\n");
        }
    } while (choice != 0);

    return 0;
}

```

```
Enter the main string: bannu      Enter your choice: 3
Enter the secondary string: royal Not equal

Menu:                             Menu:
1. Length                        1. Length
2. Concatenate                  2. Concatenate
3. Compare                      3. Compare
4. Reverse                      4. Reverse
5. Uppercase                    5. Uppercase
6. Lowercase                    6. Lowercase
0. Exit                          0. Exit
Enter your choice: 1            Enter your choice: 4
Length: 5                       layorunnab

Menu:                             Menu:
1. Length                        1. Length
2. Concatenate                  2. Concatenate
3. Compare                      3. Compare
4. Reverse                      4. Reverse
5. Uppercase                    5. Uppercase
6. Lowercase                    6. Lowercase
0. Exit                          0. Exit
Enter your choice: 2            Enter your choice: 5
Concatenated: bannuroyal        BANNUROYAL

Menu:
1. Length
2. Concatenate
3. Compare
4. Reverse
5. Uppercase
6. Lowercase
0. Exit
Enter your choice: 6
bannuroyal

Menu:
1. Length
2. Concatenate
3. Compare
4. Reverse
5. Uppercase
6. Lowercase
0. Exit
Enter your choice: 0
Exiting...
```