Wednesday, 14 February 2024 8:30 am

1.Addition of two matrix

```
 #include <stdio.h>
#define SIZE 100
int main()
{
   int A[SIZE][SIZE];
   int B[SIZE][SIZE];
   int C[SIZE][SIZE];

   int i, j,n;

    printf("enter size of array");
    scanf("%d",&n);
   printf("Enter elements in matrix A of size 3x3: \n");
   for(i=0; i<n; i++)
   {
      for(j=0; j<n; j++)
      {
         scanf("%d", &A[i][j]);

   }
}

   printf("\nEnter elements in matrix B of size 3x3: \n");
   for(i=0; i<n; i++)
   {
      for(j=0; j<n; j++)
      {
         scanf("%d", &B[i][j]);
      }
   }


   for(i=0; i<n; i++)
   {
      for(j=0; j<n; j++)
      {

         C[i][j] = A[i][j] + B[i][j];
      }
   }



   printf("\nSum of matrices A+B = \n");
   for(i=0; j<n; i++)
   {
      for(j=0; j<n; j++)
      {
         printf("%d ", C[i][j]);
      }
      printf("\n");
   }

   return 0;
```

```
}
```

2.Multiplication of two matrix

```
#include <stdio.h>
#define SIZE 100

int main() {
   int A[SIZE][SIZE];
   int B[SIZE][SIZE];
   int C[SIZE][SIZE];

   int i, j, k, n;

   printf("Enter size of array: ");
   scanf("%d", &n);

   printf("Enter elements in matrix A of size %dx%d: \n", n, n);
   for(i = 0; i < n; i++) {
      for(j = 0; j < n; j++) {
         scanf("%d", &A[i][j]);
      }
   }

   printf("\nEnter elements in matrix B of size %dx%d: \n", n, n);
   for(i = 0; i < n; i++) {
      for(j = 0; j < n; j++) {
         scanf("%d", &B[i][j]);
      }
   }


   for(i = 0; i < n; i++) {
      for(j = 0; j < n; j++) {
         C[i][j] = 0; // Initialize C[i][j] to 0
         for(k = 0; k < n; k++) {
            C[i][j] += A[i][k] * B[k][j];
         }
      }
   }

   printf("\nProduct of matrices A*B = \n");
   for(i = 0; i < n; i++) {
      for(j = 0; j < n; j++) {
         printf("%d ", C[i][j]);
      }
      printf("\n");
   }

   return 0;
}
```

3.Sum of diagonals

```
#include <stdio.h>
#define SIZE 100

int main() {
   int matrix[SIZE][SIZE];
   int i, j, n, sum_main = 0, sum_secondary = 0;

   printf("Enter the size of square matrix: ");
   scanf("%d", &n);

   printf("Enter the elements of the matrix:\n");
   for (i = 0; i < n; i++) {
      for (j = 0; j < n; j++) {
         scanf("%d", &matrix[i][j]);
      }
   }
```

```
    for (i = 0; i < n; i++) {
        sum_main += matrix[i][i];
    }


    for (i = 0; i < n; i++) {
        sum_secondary += matrix[i][n - 1 - i];
    }

    printf("Sum of main diagonal: %d\n", sum_main);
    printf("Sum of secondary diagonal: %d\n", sum_secondary);

    return 0;
}
```

4.Transpose of matrix

```
#include <stdio.h>
#define SIZE 100

int main() {
    int matrix[SIZE][SIZE], transpose[SIZE][SIZE];
    int i, j, rows, columns;

    printf("Enter number of rows and columns of the matrix: ");
    scanf("%d %d", &rows, &columns);

    printf("Enter elements of the matrix:\n");
    for (i = 0; i < rows; i++) {
        for (j = 0; j < columns; j++) {
            scanf("%d", &matrix[i][j]);
        }
    }

    printf("\nTranspose of Matrix:\n");
    for (i = 0; i < rows; i++) {
        for (j = 0; j < columns; j++) {
            printf("%d ", transpose[j][i]);
        }
        printf("\n");
    }

    return 0;
}
```

5.Insertion an element in array

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int i, n, position, element;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter elements of array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Enter position where element to be inserted: ");
    scanf("%d", &position);
    printf("Enter the element to be inserted: ");
    scanf("%d", &element);

    if (position < 0 || position > n) {
        printf("Invalid position!\n");
        return 0;
    }
```

```
    for (i = n; i > position; i--) {
        arr[i] = arr[i - 1];
    }

    arr[position] = element;

    n++;

    printf("Array after insertion:\n");
    for (i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

6.Delete an element in array

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int i, n, position;

    printf("Enter value of n: ");
    scanf("%d", &n);

    printf("Enter elements of array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Enter position of element to delete: ");
    scanf("%d", &position);

    if (position < 0 || position >= n) {
        printf("Invalid position!\n");
        return 0;
    }

    for (i = position; i < n - 1; i++) {
        arr[i] = arr[i + 1];
    }

    n--;

    printf("Array after deletion:\n");
    for (i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

7.Merge an array

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr1[MAX_SIZE], arr2[MAX_SIZE], mergedArray[MAX_SIZE * 2];
    int n, i, mergedSize;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter elements of first array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr1[i]);
    }
```

```
    printf("Enter elements of second array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr2[i]);
    }

    mergedSize = n * 2;
    for (i = 0; i < n; i++) {
        mergedArray[i] = arr1[i];
        mergedArray[i + n] = arr2[i];
    }

    printf("Merged array:\n");
    for (i = 0; i < mergedSize; i++) {
        printf("%d ", mergedArray[i]);
    }
    printf("\n");

    return 0;
}
```

8.Duplicate element

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int n, i, j;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter elements of array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Duplicate elements in the array are: ");
    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++) {
            if (arr[i] == arr[j]) {
                printf("%d ", arr[j]);
                break;
            }
        }
    }

    return 0;
}
```

9.Find the position of element and display

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int n, search_element, i, position = -1;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter elements of array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Enter the element to search: ");
    scanf("%d", &search_element);

    for (i = 0; i < n; i++) {
        if (arr[i] == search_element) {
```

```
            position = i;
            break;
        }
    }

    if (position != -1) {
        printf("Element %d found at position %d in the array.\n", search_element, position);
    } else {
        printf("Element %d not found in the array.\n", search_element);
    }

    return 0;
}
```

10.Incresaese/decreasing/alphabet

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr_int[MAX_SIZE];
    char arr_char[MAX_SIZE];
    int n, i, j, temp_int;
    char temp_char;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter %d integers:\n", n);
    for (i = 0; i < n; i++) {
        scanf("%d", &arr_int[i]);
    }

    printf("Enter %d characters:\n", n);
    for (i = 0; i < n; i++) {
        scanf(" %c", &arr_char[i]);
    }

    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - i - 1; j++) {
            if (arr_int[j] > arr_int[j + 1]) {
                temp_int = arr_int[j];
                arr_int[j] = arr_int[j + 1];
                arr_int[j + 1] = temp_int;

                temp_char = arr_char[j];
                arr_char[j] = arr_char[j + 1];
                arr_char[j + 1] = temp_char;
            }
        }
    }

    printf("Array of integers in increasing order:\n");
    for (i = 0; i < n; i++) {
        printf("%d ", arr_int[i]);
    }
    printf("\n");

    printf("Array of characters in increasing order:\n");
    for (i = 0; i < n; i++) {
        printf("%c ", arr_char[i]);
    }
    printf("\n");

    /
    for (i = 0, j = n - 1; i < j; i++, j--) {
        temp_int = arr_int[i];
        arr_int[i] = arr_int[j];
        arr_int[j] = temp_int;

        temp_char = arr_char[i];
        arr_char[i] = arr_char[j];
```

```
            arr_char[j] = temp_char;
        }

        printf("Array of integers in decreasing order:\n");
        for (i = 0; i < n; i++) {
            printf("%d ", arr_int[i]);
        }
        printf("\n");

        printf("Array of characters in decreasing order:\n");
        for (i = 0; i < n; i++) {
            printf("%c ", arr_char[i]);
        }
        printf("\n");

        return 0;
}
```

11.Validation of string

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

#define MAX_SIZE 100

int main() {
    char strings[MAX_SIZE][100];
    char target[100];
    int n, i, found = 0;

    printf("Enter the number of strings: ");
    scanf("%d", &n);

    printf("Enter %d strings:\n", n);
    for (i = 0; i < n; i++) {
        scanf("%s", strings[i]);
    }

    printf("Enter the string to search: ");
    scanf("%s", target);

    for (i = 0; i < n; i++) {
        if (strcmp(strings[i], target) == 0) {
            found = 1;
            break;
        }
    }

    if (found) {
        printf("String '%s' found at index %d\n", target, i);
    } else {
        printf("String '%s' not found in the array\n", target);
    }

    return 0;
}
```

12.largest element in array

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int n, i;
    int max;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter %d integers:\n", n);
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
```

```
    }

    // Assume first element as maximum
    max = arr[0];

    // Check for maximum in the rest of the elements
    for (i = 1; i < n; i++) {
        if (arr[i] > max) {
            max = arr[i];
        }
    }

    printf("The largest element in the array is: %d\n", max);

    return 0;
}
```

13.repeated elements

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int n, i, j;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter elements of the array:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Repeated elements in the array:\n");
    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++) {
            if (arr[i] == arr[j]) {
                printf("%d ", arr[i]);
                break;
            }
        }
    }
    printf("\n");

    return 0;
}
```

14.odd and even

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int i, n, odd[MAX_SIZE], even[MAX_SIZE];
    int oddCount = 0, evenCount = 0;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Enter %d elements of the array:\n", n);
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    for (i = 0; i < n; i++) {
        if (arr[i] % 2 == 0) {
            even[evenCount] = arr[i];
            evenCount++;
        } else {
            odd[oddCount] = arr[i];
            oddCount++;
```

```
        }
    }

    printf("\nOdd elements in the array:\n");
    for (i = 0; i < oddCount; i++) {
        printf("%d ", odd[i]);
    }

    printf("\nEven elements in the array:\n");
    for (i = 0; i < evenCount; i++) {
        printf("%d ", even[i]);
    }

    printf("\n");

    return 0;
}
```

15.sum of row and column

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE][MAX_SIZE];
    int rowSum[MAX_SIZE] = {0};
    int colSum[MAX_SIZE] = {0};
    int n, i, j;

    printf("Enter value of n: ");
    scanf("%d", &n);

    printf("Enter elements of array:\n");
    for (i = 0; i < n; i++) {
        for (j = 0; j < n; j++) {
            scanf("%d", &arr[i][j]);
            rowSum[i] += arr[i][j];
            colSum[j] += arr[i][j];
        }
    }

    printf("Sum of rows:\n");
    for (i = 0; i < n; i++) {
        printf("Row %d: %d\n", i + 1, rowSum[i]);
    }

    printf("Sum of columns:\n");
    for (j = 0; j < n; j++) {
        printf("Column %d: %d\n", j + 1, colSum[j]);
    }

    return 0;
}
```

16.5th iterated element

```
#include <stdio.h>
#define MAX_SIZE 100

int main() {
    int arr[MAX_SIZE];
    int n, i;


    printf("Enter size of array: ");
    scanf("%d", &n);


    printf("Enter elements of array:\n");
```

```
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }


    if (n >= 5) {
        printf("5th iterated element in the array: %d\n", arr[4]);
    } else {
        printf("Array does not have enough elements to print 5th iterated element.\n");
    }

    return 0;
}
```