Question - 1

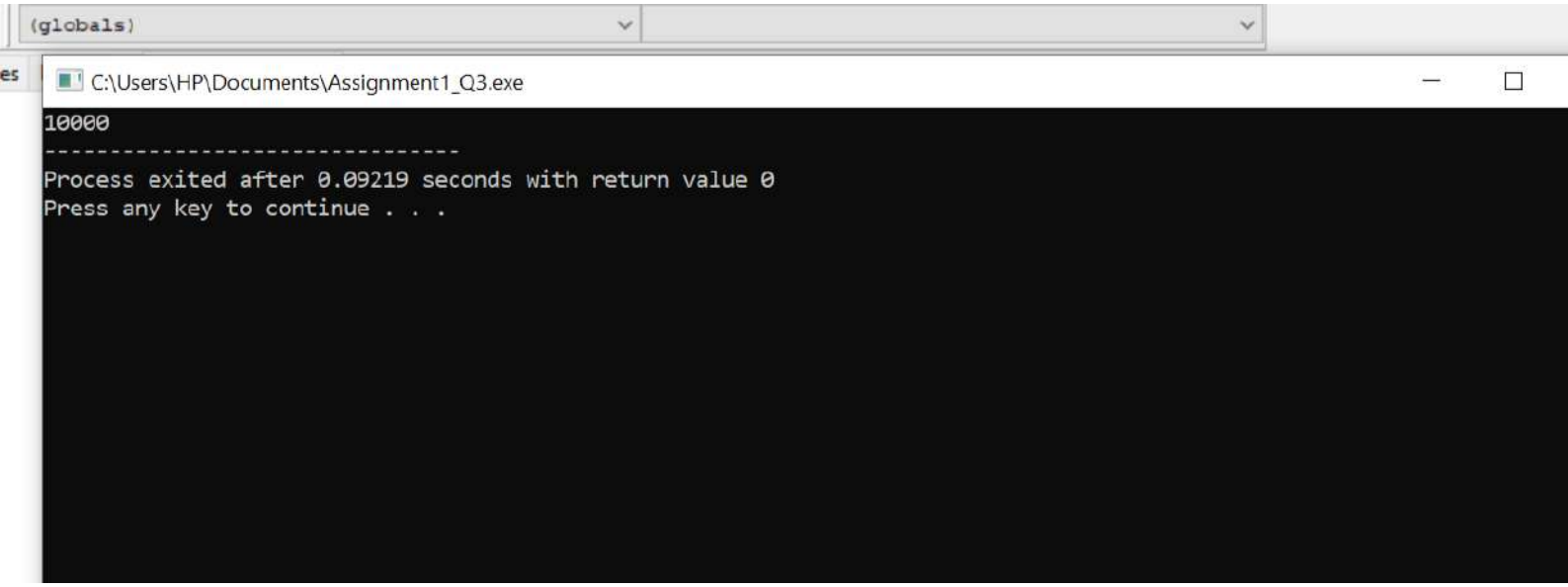
```c
#include <stdio.h>

int main() {
    int arr[10], size = 0, choice;
    int i, pos, value, found;

    while (1) {
        printf("MENU\n");
        printf("1. CREATE\n");
        printf("2. DISPLAY\n");
        printf("3. INSERT\n");
        printf("4. DELETE\n");
        printf("5. LINEAR SEARCH\n");
        printf("6. EXIT\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        if (choice == 1) {
            printf("Enter number of elements: ");
            scanf("%d", &size);
            printf("Enter %d elements:\n", size);
            for (i = 0; i < size; i++) {
                scanf("%d", &arr[i]);
            }
        }
        else if (choice == 2) {
            if (size == 0) {
                printf("Array is empty.\n");
            } else {
                printf("Array elements are:\n");
                for (i = 0; i < size; i++) {
                    printf("%d ", arr[i]);
                }
                printf("\n");
            }
        }
        else if (choice == 3) {
            if (size >= 10) {
                printf("Array is full. Cannot insert.\n");
                continue;
            }
            printf("Enter position to insert (0 to %d): ", size);
            scanf("%d", &pos);
            if (pos < 0 || pos > size) {
                printf("Invalid position.\n");
            } else {
                printf("Enter value to insert: ");
                scanf("%d", &value);
                for (i = size; i > pos; i--) {
                    arr[i] = arr[i - 1];
                }
                arr[pos] = value;
                size++;
                printf("Value inserted.\n");
            }
```

```
        }
        else if (choice == 4) {
            if (size == 0) {
                printf("Array is empty. Nothing to delete.\n");
                continue;
            }
            printf("Enter position to delete (0 to %d): ", size - 1);
            scanf("%d", &pos);
            if (pos < 0 || pos >= size) {
                printf("Invalid position.\n");
            } else {
                for (i = pos; i < size - 1; i++) {
                    arr[i] = arr[i + 1];
                }
                size--;
                printf("Element deleted.\n");
            }
        }
        else if (choice == 5) {
            if (size == 0) {
                printf("Array is empty.\n");
                continue;
            }
            printf("Enter value to search: ");
            scanf("%d", &value);
            found = 0;
            for (i = 0; i < size; i++) {
                if (arr[i] == value) {
                    printf("Value found at position %d\n", i);
                    found = 1;
                    break;
                }
            }
            if (!found) {
                printf("Value not found in array.\n");
            }
        }
        else if (choice == 6) {
            printf("Exiting program.\n");
            break;
        }
        else {
            printf("Invalid choice. Please try again.\n");
        }
    }

    return 0;
}

```

Question - 2

```c
#include <stdio.h>

int main() {
    int arr[10], n;

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

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

    for (int i = 0; i < n; i++) {
        for (int j = i + 1; j < n; ) {
            if (arr[i] == arr[j]) {
                for (int k = j; k < n - 1; k++) {
                    arr[k] = arr[k + 1];
                }
                n--;
            }
            else {
                j++;
            }
        }
    }
    printf("Array after removing duplicates: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}

```

Question - 3


(globals)
C:\Users\HP\Documents\Assignment1_Q3.exe
10000

Process exited after 0.09219 seconds with return value 0
Press any key to continue . . .

Question - 4

```c
#include <stdio.h>

int main() {
    int choice;

    printf("MENU\n");
    printf("1. Reverse an Array\n");
    printf("2. Matrix Multiplication\n");
    printf("3. Transpose of a Matrix\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    if (choice == 1) {
        int arr[100], n, i, temp;
        printf("Enter size of array: ");
        scanf("%d", &n);
        printf("Enter %d elements:\n", n);
        for (i = 0; i < n; i++) {
            scanf("%d", &arr[i]);
        }

        for (i = 0; i < n / 2; i++) {
            temp = arr[i];
            arr[i] = arr[n - 1 - i];
            arr[n - 1 - i] = temp;
        }

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

    else if (choice == 2) {
        int a[10][10], b[10][10], result[10][10];
        int r1, c1, r2, c2;
        int i, j, k;

        printf("Enter rows and columns for Matrix A: ");
        scanf("%d%d", &r1, &c1);
        printf("Enter rows and columns for Matrix B: ");
        scanf("%d%d", &r2, &c2);

        if (c1 != r2) {
            printf("Matrix multiplication not possible. Columns of A must equal rows of B.\n"
        } else {
            printf("Enter elements of Matrix A:\n");
            for (i = 0; i < r1; i++) {
                for (j = 0; j < c1; j++) {
                    scanf("%d", &a[i][j]);
                }
            }
            printf("Enter elements of Matrix B:\n");
            for (i = 0; i < r2; i++) {
```

```
                for (j = 0; j < c2; j++) {
                    scanf("%d", &b[i][j]);
                }
            }
            for (i = 0; i < r1; i++) {
                for (j = 0; j < c2; j++) {
                    result[i][j] = 0;
                    for (k = 0; k < c1; k++) {
                        result[i][j] += a[i][k] * b[k][j];
                    }
                }
            }
            printf("Resultant Matrix:\n");
            for (i = 0; i < r1; i++) {
                for (j = 0; j < c2; j++) {
                    printf("%d ", result[i][j]);
                }
                printf("\n");
            }
        }
    }
    else if (choice == 3) {
        int mat[10][10], trans[10][10];
        int rows, cols;
        int i, j;
        printf("Enter rows and columns of matrix: ");
        scanf("%d%d", &rows, &cols);
        printf("Enter elements of matrix:\n");
        for (i = 0; i < rows; i++) {
            for (j = 0; j < cols; j++) {
                scanf("%d", &mat[i][j]);
            }
        }
        for (i = 0; i < rows; i++) {
            for (j = 0; j < cols; j++) {
                trans[j][i] = mat[i][j];
            }
        }
        printf("Transpose of matrix:\n");
        for (i = 0; i < cols; i++) {
            for (j = 0; j < rows; j++) {
                printf("%d ", trans[i][j]);
            }
            printf("\n");
        }
    }
    else {
        printf("Invalid choice.\n");
    }
    return 0;
}
```

Question - 5

```c
#include <stdio.h>

int main() {
    int rows, cols;
    int i, j;
    int arr[5][5];

    printf("Enter number of rows: ");
    scanf("%d", &rows);

    printf("Enter number of columns: ");
    scanf("%d", &cols);

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

    printf("\nSum of each row:\n");
    for (i = 0; i < rows; i++) {
        int rowSum = 0;
        for (j = 0; j < cols; j++) {
            rowSum += arr[i][j];
        }
        printf("Row %d sum = %d\n", i + 1, rowSum);
    }

    printf("\nSum of each column:\n");
    for (j = 0; j < cols; j++) {
        int colSum = 0;
        for (i = 0; i < rows; i++) {
            colSum += arr[i][j];
        }
        printf("Column %d sum = %d\n", j + 1, colSum);
    }

    return 0;
}

```