Name: Tanmay Vig

Roll Num: 19BCS061

Class: 3rd year

Ans 1:

Code

```
#include <stdio.h>
#include <iostream>
#include<bits/stdc++.h>
using namespace std;

class Node {
public:
   int id;
   string name data;
   int salary;
   Node* next;
   Node(int id,string name,int salary)
   {
      this->id = id;
      this->name = name;
      this->salary = salary;
      this->next = NULL;
   }
};
class Linkedlist {
   Node* head;
public:
   Linkedlist() { head = NULL; }
   void insertNode();
```

```
    void printList();
    void deleteNode();
    void udateNode();
};
void Linkedlist::updateNode()
{
    int s;
    cout<<"Enter Employee Id: ";
    cin>>s;
    Node *temp = head;
    while (temp != NULL) {
        if(temp>id==s)
        {
            string name;int salary;
            cout<<"Enter Employee Name: ";
            cin>>name;
            cout<<"Enter Employee Salary: ";
            cin>>salary;
            temp->name = name;
            temp->salary = salary;
            break;
        }
        temp = temp->next;
    }
}
void Linkedlist::deleteNode()
{
    int s;
    cout<<"Enter Employee Id: ";
```

```
    cin>>s;
    Node *temp = head, *temp2 = NULL;
    while (temp->next != NULL) {
       if(temp->next->id==s)
       {
          temp2 = temp->next;
          if(temp->next->next==NULL)
          temp->next = NULL;
          else
          temp->next = temp->next->next;

          break;
       }
       temp = temp->next;
    }
    delete temp2;
}

void Linkedlist::insertNode()
{
    int id;string name;int salary;
    cout<<"Enter Employee Id: ";
    cin>>id;
    cout<<"Enter Employee Name: ";
    cin>>name;
    cout<<"Enter Employee Salary: ";
    cin>>salary;
    Node* newNode = new Node(id,name,salary);
    if (head == NULL) {
```

```
        head = newNode;
        return;
    }
    Node* temp = head;
    while (temp->next != NULL) {

        temp = temp->next;
    }
    temp->next = newNode;
}
void Linkedlist::printList()
{
    Node* temp = head;

    if (head == NULL) {
        cout << "List empty" << endl;
        return;
    }

    while (temp != NULL) {
        cout<<"Employee Id:             "<<temp->id<<endl;
        cout<<"Employee Name:           "<<temp->name<<endl;
        cout<<"Employee Salary:         "<<temp->salary<<endl;
        temp = temp->next;
    }
}
int main()
{
    Linkedlist list;
```

```
    int n,ch,t,found,s;
    do {
        cout << "\n\n1:Display All Employee\n2:Add Employee\n3: Update Employee\n4:Delete
Employee\n5:Exit" << endl;
        cout << "Please input your choice:  ";
        cin >> ch;
        cout<<endl;
        switch (ch) {
        case 1:
            list.printList();
            break;
        case 2:
            list.insertNode();
            break;
        case 3:
            list.updateNode();
            break;
        case 4:
            list.deleteNode();
        default:
            cout << "Wrong Option" << endl;
        }
    } while (ch != 5);
    return 0;
}
```

```
PS D:\sem-5\oop_Lab> cd "d:\sem-5\oop_Lab\" ; if ($?) { g++ Q1sess.cpp -o Q1sess } ; if ($?) { .\Q1sess }
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 1
enter id: 100
enter name: tanmay
enter salary: 100
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 1
enter id: 101
enter name: almas
enter salary: 1010
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 1
enter id: 102
enter name: amir
```

```
enter id: 102
enter name: amir
enter salary: 10
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 1
enter id: 103
enter name: hello
enter salary: 3
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 1
enter id: 104
enter name: tla
enter salary: 10
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 4
ID: 100 Name: tanmay Salary:100
```

```
To add Employee Enter 1
To delete Employee Enter 2
To update Employee Enter 3
Enter 4 to print list
Enter 0 to Exit
  Enter your choice: 4
ID: 100 Name: tanmay Salary:100
ID: 101 Name: almas Salary:1010
ID: 102 Name: amir Salary:10
ID: 103 Name: hello Salary:3
ID: 104 Name: tla Salary:10
```

Ans 2

Code:

```
#include <iostream>
using namespace std;

int N;
class Matrix {

   int arr[100][100];

public:
   void operator>>(Matrix);
   void operator<<(Matrix);
   void operator+(Matrix );
   void operator-(Matrix );
   void operator*(Matrix );
   void operator~();
};
void Matrix::operator>>(Matrix temp)
```

```
{
   cout<<"Enter the elements of Matrix:\n";

   for (int i = 0; i < N; i++) {

      for (int j = 0; j < N; j++) {

         cin>>arr[i][j];
      }
   }
}
void Matrix::operator<<(Matrix temp)
{
   for (int i = 0; i < N; i++) {

      for (int j = 0; j < N; j++) {
         cout << arr[i][j] << ' ';
      }
      cout << endl;
   }
}
void Matrix::operator+(Matrix ob)
{
   Matrix mat,temp;
   for (int i = 0; i < N; i++) {
      for (int j = 0; j < N; j++) {

         mat.arr[i][j] = arr[i][j]
                  + ob.arr[i][j];
```

```
        }
    }
    cout<<"Sum of matrix is::\n";
    mat<<temp;
}
void Matrix::operator-(Matrix ob)
{
        Matrix mat,temp;
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N; j++) {

            mat.arr[i][j] = arr[i][j]
                        - ob.arr[i][j];
        }
    }
    cout<<"Subtraction of matrix is::\n";
    mat<<temp;
}
void Matrix::operator*(Matrix ob)
{
    Matrix mat,temp;
    for (int i = 0; i < N; i++) {

        for (int j = 0; j < N; j++) {

            mat.arr[i][j] = 0;

            for (int k = 0; k < N; k++) {
                mat.arr[i][j] += arr[i][k]
```

```
                    * (ob.arr[k][j]);
            }
        }
    }
    cout<<"Multiplication of matrix is::\n";
    mat<<temp;
}
void Matrix::operator~()
{
        Matrix mat,temp;
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N; j++) {

            mat.arr[j][i] = arr[i][j];
        }
    }
    cout<<"Transpose of matrix is::\n";
    mat<<temp;
}
int main()
{
    Matrix temp;
    cout<<"Enter the size of matrix: ";
    cin>>N;
    Matrix mat1;
    cout<<"Matrix 1:\n";
    mat1>>temp;
    int f;
    do{
```

```
    cout<<"Enter:";
    cout<<"\tTo Add:1\n\tTo Subtract:2\n\tTo Multiplication:3\n\tTo find Transpose of
matrix:4\n\tExit:5\n";


    cin>>f;
    if(f==1)
    {
      Matrix mat2;
      cout<<"Matrix 2:\n";
      mat2>>temp;
      mat1 + mat2;
    }
    else if(f==2)
    {
       Matrix mat2;
      cout<<"Matrix 2:\n";
      mat2>>temp;
      mat1 - mat2;
    }
    else if(f==3)
    {
       Matrix mat2;
      cout<<"Matrix 2:\n";
      mat2>>temp;
      mat1 * mat2;
    }
    else if(f==4)
    {
      ~mat1;
```

```
    }
    else
    break;
  }while(f<=4);
  return 0;
}
```

```
PS D:\sem-5\oop Lab> cd "d:\sem-5\oop_Lab\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ;
if ($?) { .\tempCodeRunnerFile }
Enter the size of matrix: 2
Matrix 1:
Enter the elements of Matrix:
1 2
3 4
Enter:  To Add:1
        To Subtract:2
        To Multiplication:3
        To find Transpose of matrix:4
        Exit:5
1
Matrix 2:
Enter the elements of Matrix:
1 1
1
1
Sum of matrix is::
2 3
4 5
Enter:  To Add:1
        To Subtract:2
```

```
 2 3
 4 5
 Enter:  To Add:1
         To Subtract:2
         To Multiplication:3
         To find Transpose of matrix:4
         Exit:5
 2
 Matrix 2:
 Enter the elements of Matrix:
 1 1
 1 1
 Subtraction of matrix is::
 0 1
 2 3
 Enter:  To Add:1
         To Subtract:2
         To Multiplication:3
         To find Transpose of matrix:4
         Exit:5
 3
 Matrix 2:
 Enter the elements of Matrix:
 1 2
```

```
3
Matrix 2:
Enter the elements of Matrix:
1 2
3 4
Multiplication of matrix is::
7 10
15 22
Enter:  To Add:1
        To Subtract:2
        To Multiplication:3
        To find Transpose of matrix:4
        Exit:5
4
Transpose of matrix is::
1 3
2 4
Enter:  To Add:1
        To Subtract:2
        To Multiplication:3
        To find Transpose of matrix:4
        Exit:5
5
```