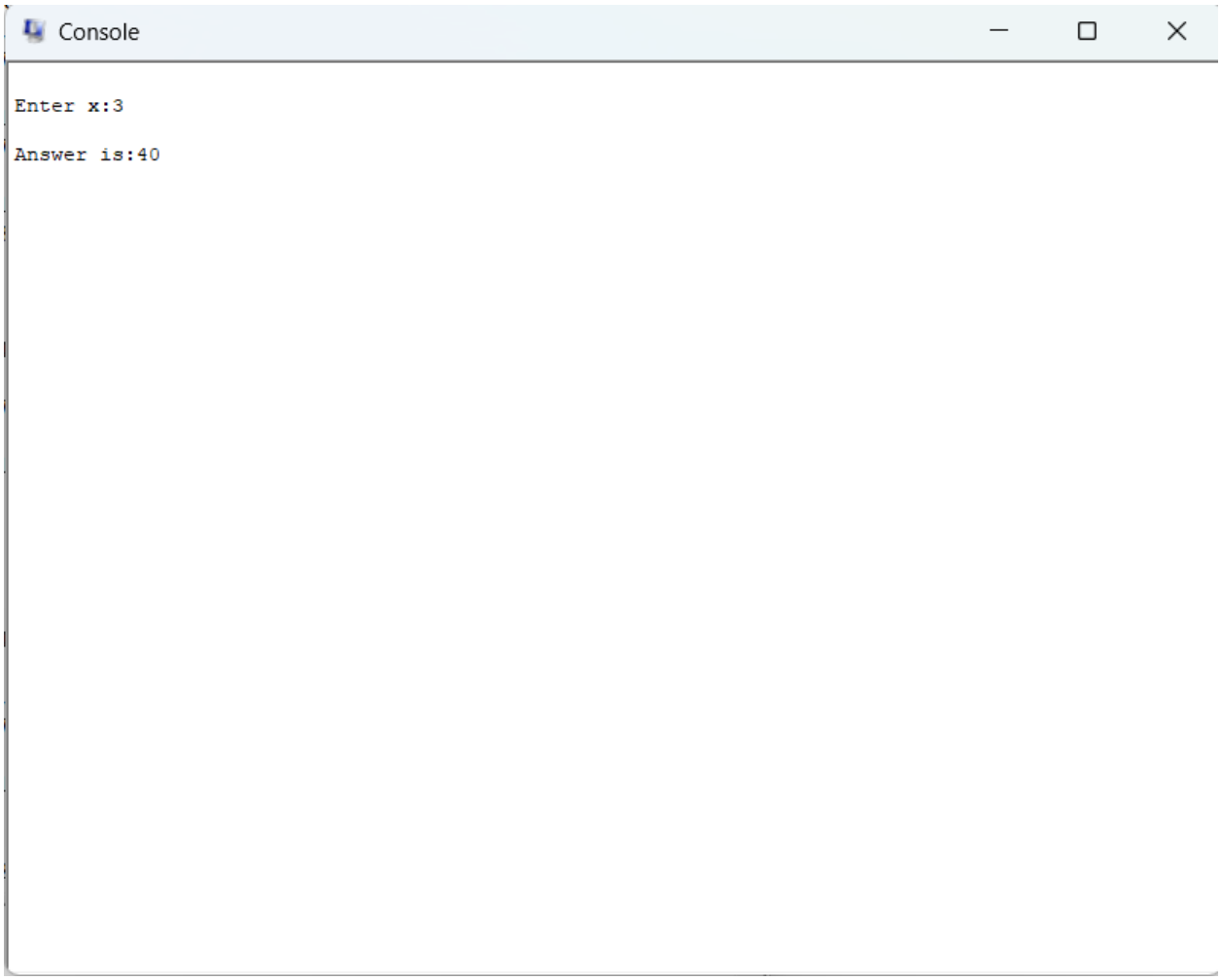
ENDSEM

Name-Pranav Tambe
Roll No-2106339

Q.1


Console
Enter x:3
Answer is:40

Q.2

A]

a)String =T,T,NT,T==1101

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
The accuracy of branch always taken predictor is 75%
The accuracy of branch always not taken predictor is 25%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 0%
PS D:\architecture>
```

Two bit predictor accuracy for forever repetition 1101 (I did for 1 lakh)

```
PS D:\architecture> cd "d:\architecture\" ; if ($?) { g++ Q2_EndsemCS211.cpp -o (
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
Enter number of times you want to repeat the string :100000
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 74.9993%
PS D:\architecture>
```

ii)String =T,T,T,NT,NT==11100

```
PS D:\architecture> cd "d:\architecture\" ; if ($?) { g++ Q2_EndsemCS211.cpp -o Q2_EndsemCS211 }
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
The accuracy of branch always taken predictor is 60%
The accuracy of branch always not taken predictor is 40%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 20%
PS D:\architecture>
```

Two bit predictor accuracy for forever repetition 1101 (I did for 1 lakh)

```
PS D:\architecture> cd "d:\architecture\" ; if ($?) { g++ Q2_EndsemCS211.cpp -o Q2
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
Enter number of times you want to repeat the string :100000
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 39.9998%
PS D:\architecture>
```

i)String =T,T,NT,T==1101

Initial state=0(Definite predict not taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
The accuracy of branch always taken predictor is 75%
The accuracy of branch always not taken predictor is 25%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 0%
PS D:\architecture>
```

Initial state=1(Probable predict not taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
The accuracy of branch always taken predictor is 75%
The accuracy of branch always not taken predictor is 25%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :1
The accuracy of  2 bit adder predictor is 50%
PS D:\architecture>
```

Initial state=2(Probable predict taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
The accuracy of branch always taken predictor is 75%
The accuracy of branch always not taken predictor is 25%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :2
The accuracy of  2 bit adder predictor is 75%
PS D:\architecture>
```

Initial state=3(Definite predict taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :1101
The accuracy of branch always taken predictor is 75%
The accuracy of branch always not taken predictor is 25%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :3
The accuracy of  2 bit adder predictor is 75%
PS D:\architecture>
```

Predictor accuracy for 4 begin states in decreasing order
3(75%)=2(75%)>1(50%)>0(0%)

ii)String =T,T,T,NTN,T==1101
Initial state=0(Definite predict not taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
The accuracy of branch always taken predictor is 60%
The accuracy of branch always not taken predictor is 40%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :0
The accuracy of  2 bit adder predictor is 20%
PS D:\architecture>
```

Initial state=1(Probable predict not taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
The accuracy of branch always taken predictor is 60%
The accuracy of branch always not taken predictor is 40%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :1
The accuracy of  2 bit adder predictor is 40%
PS D:\architecture>
```

Initial state=2(Probable predict taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
The accuracy of branch always taken predictor is 60%
The accuracy of branch always not taken predictor is 40%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :2
The accuracy of  2 bit adder predictor is 60%
PS D:\architecture>
```

Initial state=3(Definite predict taken)

```
Enter a string of outcomes  [1==Taken] [0==Not taken] :11100
The accuracy of branch always taken predictor is 60%
The accuracy of branch always not taken predictor is 40%
0==Definite predict not taken
1==Probable predict not taken
2==Probale predict taken
3==Definite predict taken
Enter a number (0,1,2,3) :3
The accuracy of  2 bit adder predictor is 60%
PS D:\architecture>
```

Predictor accuracy for 4 begin states in decreasing order
3(60%)=2(60%)>1(40%)>0(20%)

Q.3)Output is 32 as shown