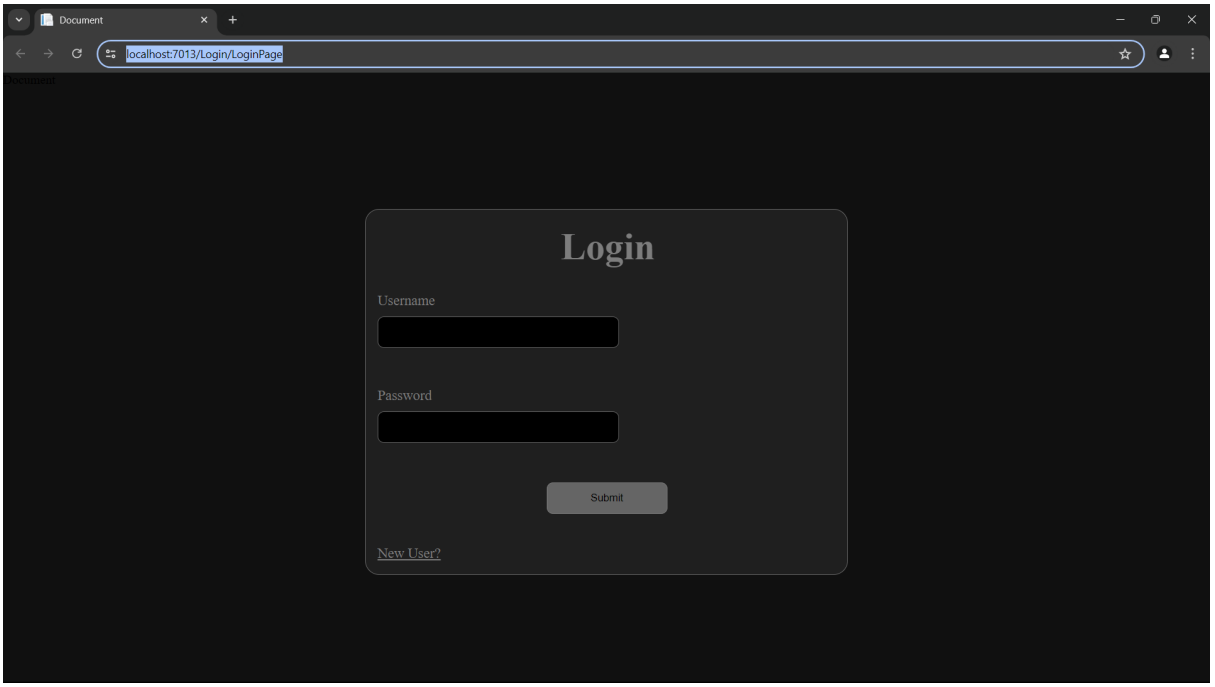
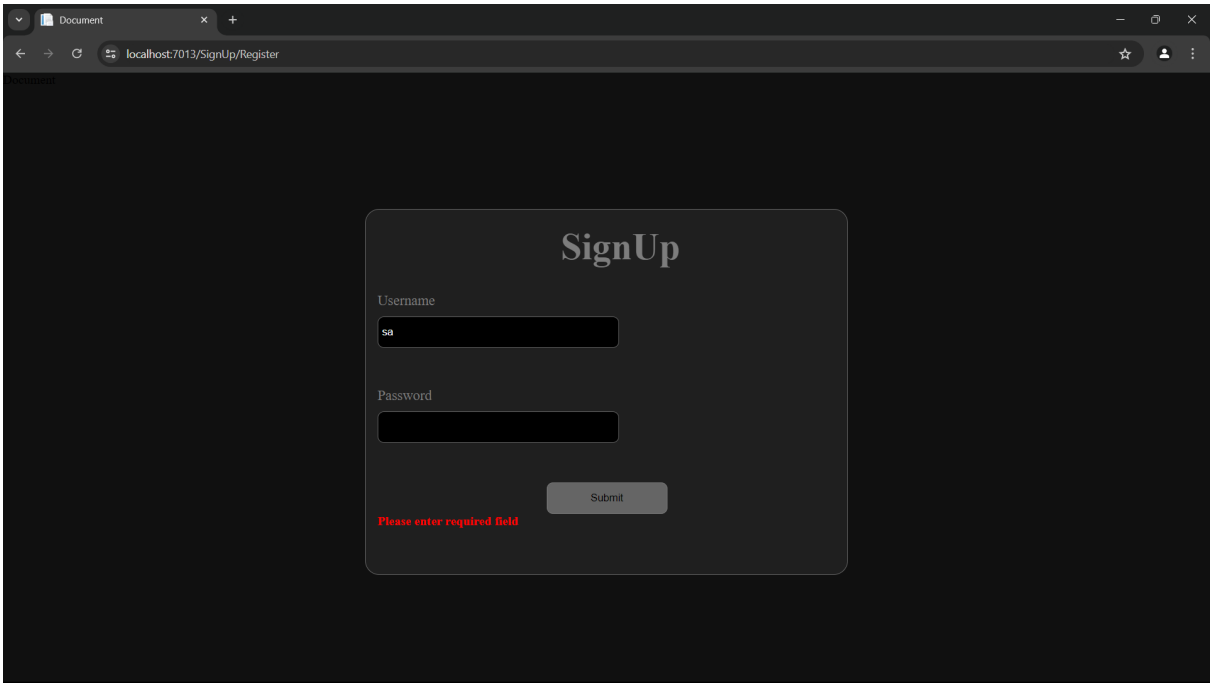
Test

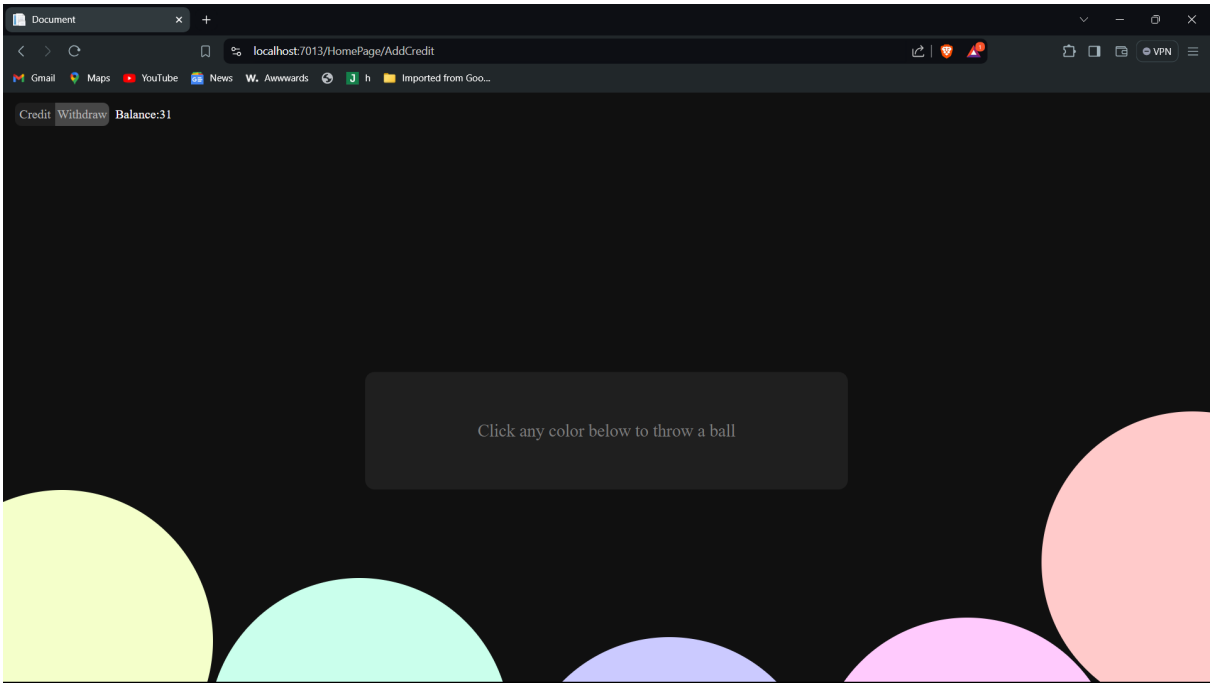
Type

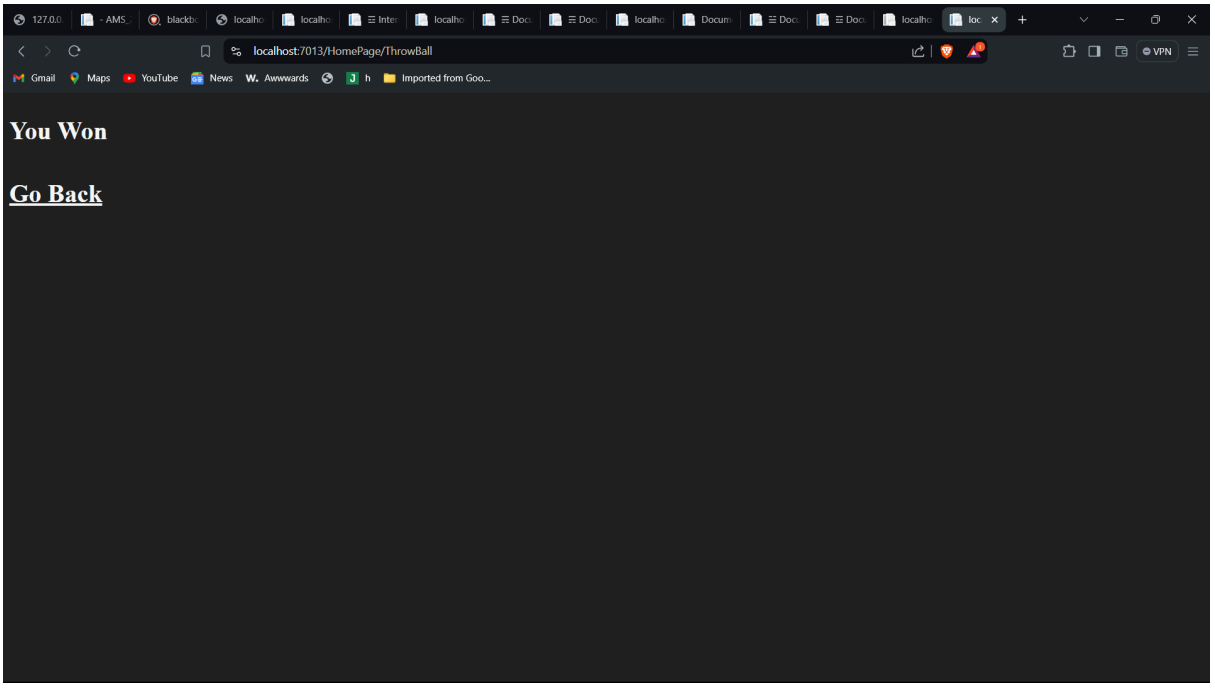
Question 1

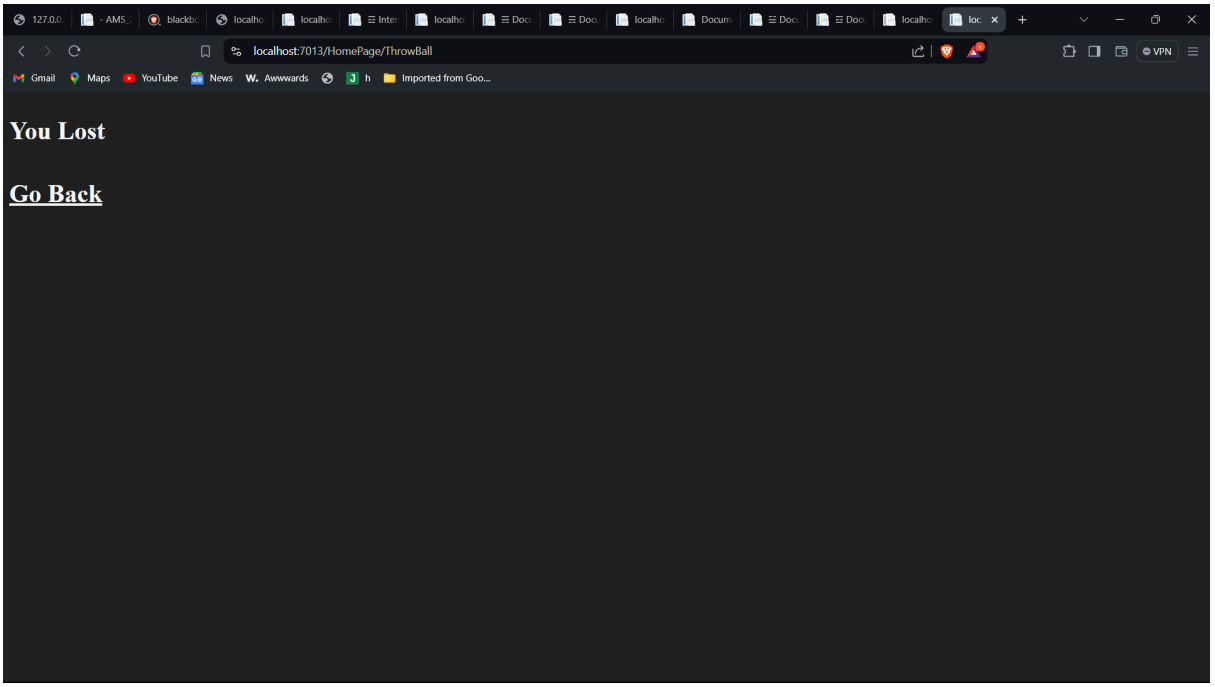
OOP. Consider a scenario where Shamu wants to play a Match Ball game. A MatchBallGameMachine has options to throw a ball, and it also has the ball selected
by machine which is not shown to the user.
Consider a class BallMachine which will contain 5 different color balls (consider any
5 colors), the machine has a behavior to always keep any random ball selected. User will have options to throw a ball, credit points and withdraws points. User should select credit point to start a game with minimum amount, so whatever amount
is credited by user, consider machine will allow 1 credit point per 5 Rs/- and number
of credits point equal to the number of chances to play.
To Play the game user will choose option throw ball by selecting color and machine
will process this input to match the ball thrown by user with its own selected ball, if
machine founds a match a credit point will be added to user account otherwise fail
and deduct the credit point by 1 and also machine will change the selected ball internally. User should also able to withdraw his/her points in rupees, wherein 1 credit
point = 5 Rs/-
Your program should consider the Machine and Accounts (manage user points) entity
as a separate entity.


Document
localhost:7013/Login/LoginPage
Login
Username
Password
Submit
New User?


Document
localhost:7013/SignUp/Register
SignUp
Username
sa
Password
Submit
Please enter required field

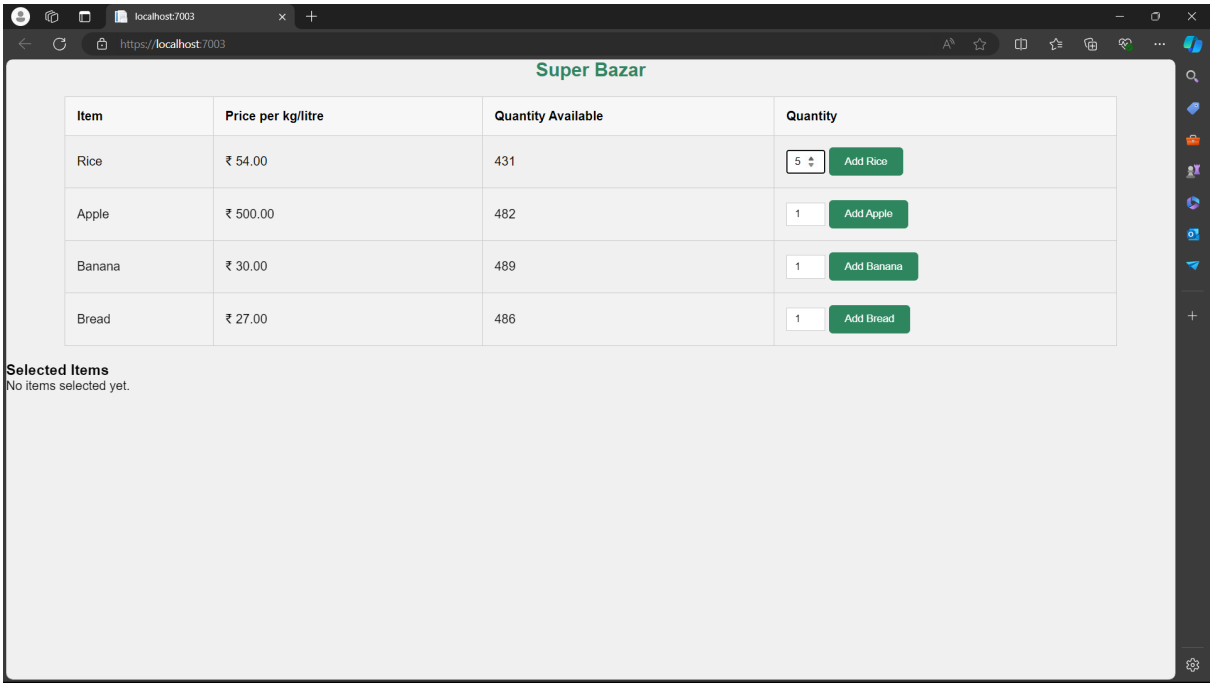

Document
localhost:7013/HomePage/AddCredit
Gmail
Maps
YouTube
News
Awwwards
Imported from Goo...
Credit
Withdraw
Balance:31
Click any color below to throw a ball

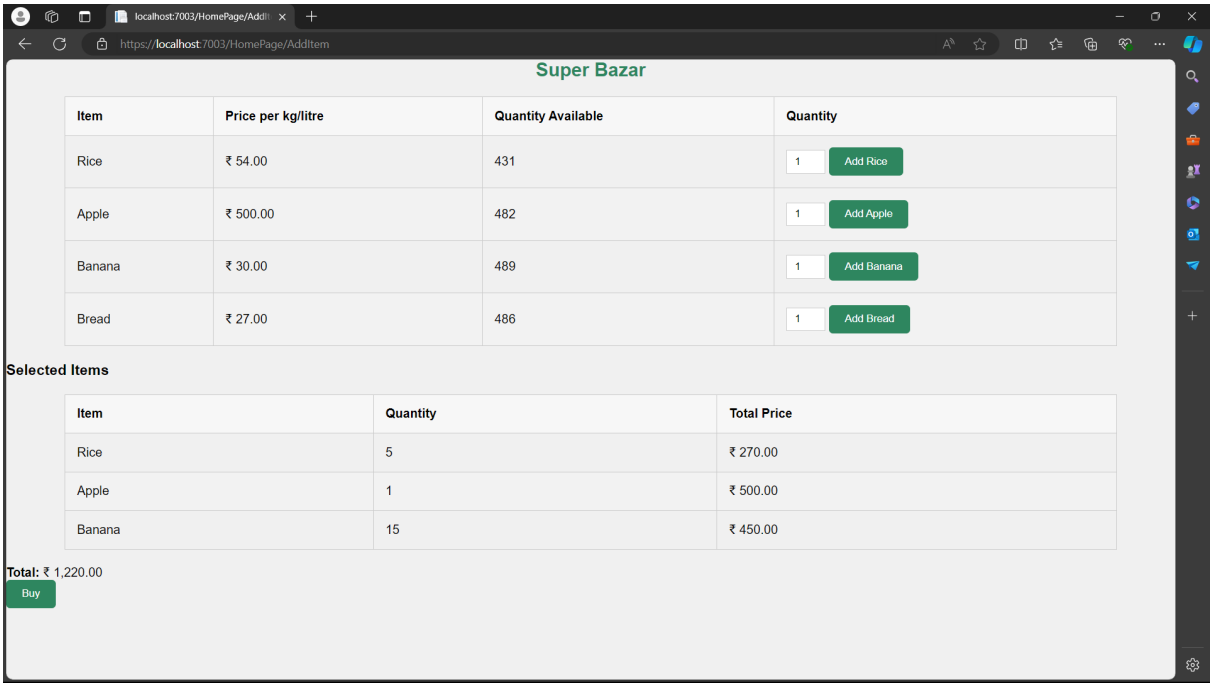

localhost:7013/HomePage/ThrowBall
Gmail
Maps
YouTube
News
Awwwards
Imported from Goo...
You Won
Go Back

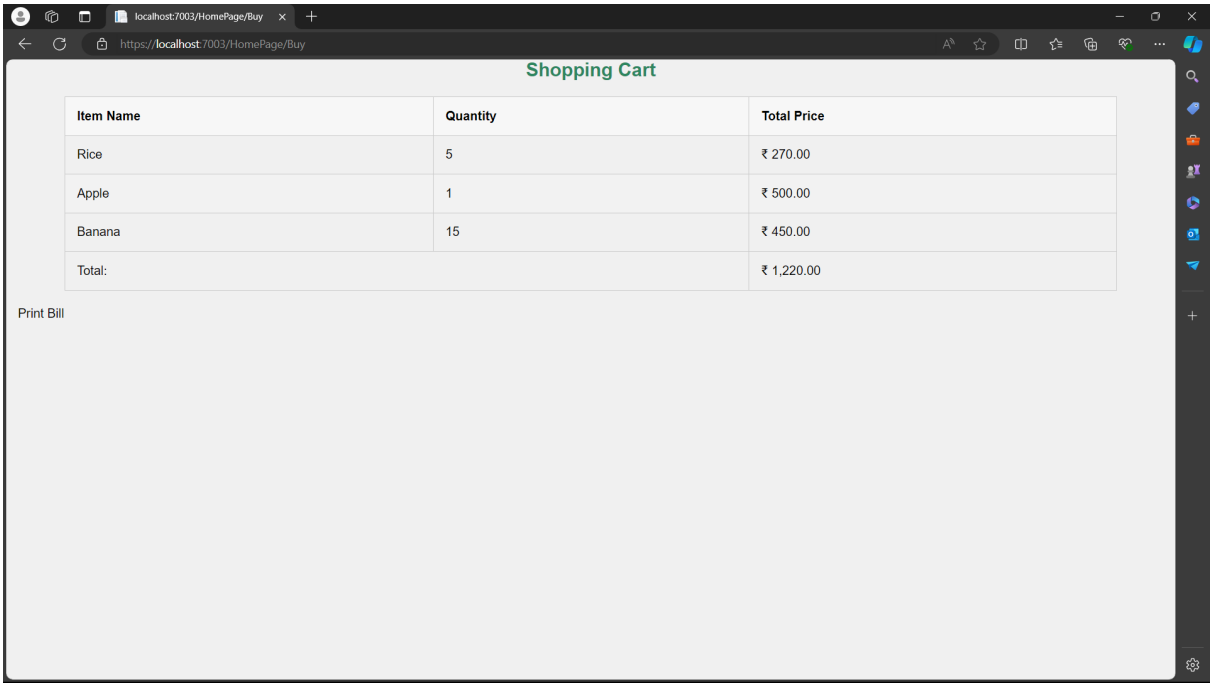


Question 2

OOP. Consider a scenario where, Shantilal wants to go to the SuperBazar and wants to buy
some household items. Shantilal don't want to waste his time on staying in the queue of
SuperBazar. So Shantilal choose to visit the automated items dispenser machine.
Create a class which will represent an automated household items dispenser. The machine has
functionality, from which user can select his own list of items along with the quantity and
each item will show only the standard rates initially (i.e. per KG or per litres (in case of liquid
based items)).
Create another class which will represent the account section of the SuperBazar, this should
be linked with the automated machine. This should be able to handle all the details of billing,
calculation & money exchange.
Create a separate class SuparBazar which includes the automated machine and its related
things. And help Shantilal to buy items from SuparBazar.


localhost:7003
https://localhost:7003
Super Bazar
Item
Price per kg/litre
Quantity Available
Quantity
Rice
₹ 54.00
431
5
Add Rice
Apple
₹ 500.00
482
1
Add Apple
Banana
₹ 30.00
489
1
Add Banana
Bread
₹ 27.00
486
1
Add Bread
Selected Items
No items selected yet.


localhost:7003/HomePage/AddI
https://localhost:7003/HomePage/AddItem
Super Bazar
Item
Price per kg/litre
Quantity Available
Quantity
Rice
₹ 54.00
431
1
Add Rice
Apple
₹ 500.00
482
1
Add Apple
Banana
₹ 30.00
489
1
Add Banana
Bread
₹ 27.00
486
1
Add Bread
Selected Items
Item
Quantity
Total Price
Rice
5
₹ 270.00
Apple
1
₹ 500.00
Banana
15
₹ 450.00
Total: ₹ 1,220.00
Buy



Question 3

Logical. Raju has recently started studying string algorithms. So, as to gauge his knowledge,
Arju challenges him to a task.
"Given a string s, answer several times a query to determine whether a substring s[i,
j] (inclusive) is palindromic or not.", said Arju in a confident tone!
As smart as Raju is, he was able to instantly find the solution!
Now, Raju has challenged little Arju to do the same task by reversing a specific substring
beforehand. As Arju is still just a novice, she asks for your help.
You have to write a program that answers Q queries on a string S.

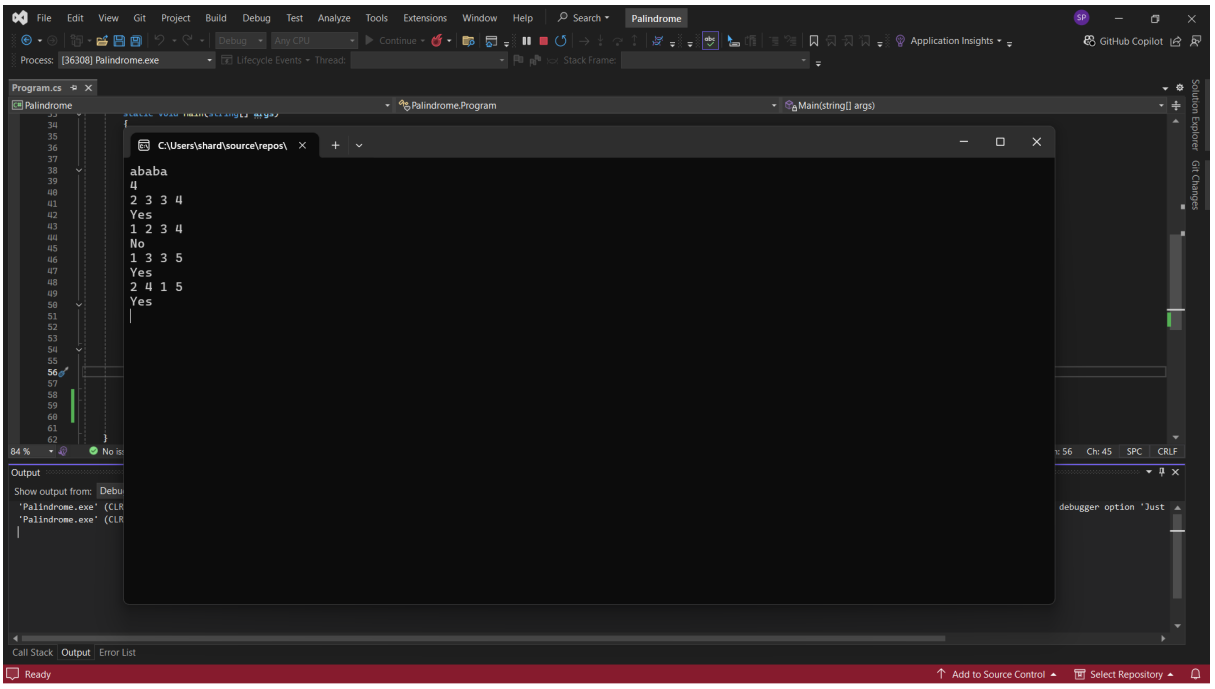
Each query contains four integers (i, j, k, l). For every query, first reverse the substring s[i,
j] (inclusive) and then report if substring s[k, l] (inclusive) is a palindrome.
Note that the reversal operations are only for the specific query and should not persist for
further queries. Please check the explanation section for better understanding.
Input: The first line of input file contains string S. The next line contains an integer Q.
Each of the following Q lines each contain 4 space separated integers i, j, k and l.

Output: Output exactly Q lines, each containing the result of corresponding query
as "Yes" or "No".
Constraints:
▮ 1 <= |S| <= 10 5
▮ 1 <= Q <= 9999
▮ 1 <= k <= I <= |S|
▮ S contains only the chars ‘a’ to ‘z’
Sample Input:
ababa
4
2 3 3 4
1 2 3 4
1 3 3 5
2 4 1 5
Sample Output:
Yes
No
Yes
Yes

```
using System;

namespace Palindrome
{
    internal class Program
    {
        public static bool IsPalindrome(char[] str, int start
        {
            while (start < end)
            {
                if (str[start] != str[end])
                {
                    return false;
                }
                start++;
                end--;
            }
```

```
            return true;
        }

        public static void ReverseString(char[] str, int star
        {
            while (start < end)
            {
                char temp = str[start];
                str[start] = str[end];
                str[end] = temp;
                start++;
                end--;
            }
        }

        static void Main(string[] args)
        {
            char[] s = Console.ReadLine().Trim().ToCharArray(
            int q = int.Parse(Console.ReadLine());

            for (int query = 0; query < q; query++)
            {
                string[] inputs = Console.ReadLine().Split();
                int i = int.Parse(inputs[0]) - 1;
                int j = int.Parse(inputs[1]) - 1;
                int k = int.Parse(inputs[2]) - 1;
                int l = int.Parse(inputs[3]) - 1;

                char[] tempArray = (char[])s.Clone();

                ReverseString(tempArray, i, j);

                if (IsPalindrome(tempArray, k, l))
                {
                    Console.WriteLine("Yes");
                }
                else
                {
```

```
                    Console.WriteLine("No");
                }
            }

            Console.ReadKey();
        }
    }
}
```



Question - 4

Prepare SQL queries for the following sub points.
Write a Sql Query to Calculate Cumulative Total of Employee Salary.

```
select SQ1.Emp_Id, SQ1.First_Name, SQ1.Last_Name, SQ1.Dept_Id
(select sum(SQ2.salary) from SQL_Query SQ2 where SQ2.Emp_id <=
Commulative_Salary
from SQL_Query SQ1;
```

1	Ramesh	Mahatme	1	Developer	20000	20000
2	Rajesh	Shetty	1	Developer	20000	40000
3	Ram	Sarkar	2	SEO	40000	80000

4 Ajay Kumar 2 Team Lead 60000 40000
5 Rama Solanki 3 Module Lea 50000 190000
6 Atharva Jha 3 Manager 80000 270000

a. Write an SQL query to find the position of the alphabet (‘a’) in the first name column from
Employee table.

```
SELECT First_Name, CHARINDEX('a', First_Name) AS Position_of_
 FROM SQL_Query
 WHERE CHARINDEX('a', First_Name) > 0;
```

Ramesh 2
Rajesh 2
Ram 2
Ajay 1
Rama 2
Atharva 1

b. Write an SQL query to fetch employee names with salaries >= 50000 and <= 100000.

```
SELECT First_Name, Last_Name, Salary FROM SQL_Query
WHERE Salary >= 50000 AND Salary<= 100000;
```

Ajay Kumar 60000
Rama Solanki 50000
Atharva Jha 80000

d. Write an SQL query to fetch the list of employees with the same salary.

c. Write an SQL query to determine the 4th highest salary.

```
SELECT MAX(Salary) AS Fourth_Highest_Salary FROM SQL_Query WH
 < (SELECT MAX(Salary)
   FROM SQL_Query
    WHERE Salary < (
        SELECT MAX(Salary)
        FROM SQL_Query
        WHERE Salary < (
```

```
            SELECT MAX(Salary)
            FROM SQL_Query
        )
    )
);
```

40000

d. Write an SQL query to fetch the list of employees with the same salary.

```
SELECT
    SQ1.Emp_Id,
    SQ1.First_Name,
    SQ1.Last_Name,
    SQ2.Emp_Id,
    SQ2.First_Name,
    SQ2.Last_Name,
    SQ1.Salary
FROM
    SQL_Query SQ1
INNER JOIN
    SQL_Query SQ2 ON SQ1.Salary = SQ2.Salary AND SQ1.Emp_Id !
```

1 Ramesh Mahatme

2 Rajesh Shetty