Development Tests
Phase 2

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1. JavaScript

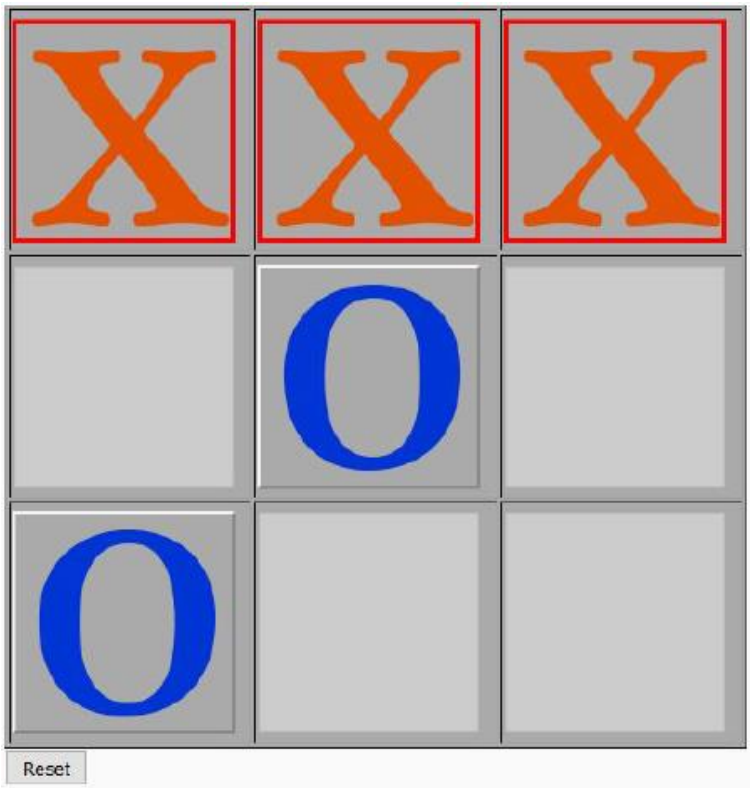
There are two exercise options, and you must **choose one** of them:

Tic-Tac-Toe Game

- Create a Tic-Tac-Toe game in a HTML page.
- Use HTML, JavaScript, and CSS.
- Not post back required (server side).
- The application must draw a 3x3 grid.
- When a user clicks on a grid cell, the application must change the background from blank to X or O (alternating) using CSS styles.
- The application must check for a winner (three of a kind O or X: horizontal, vertical, or diagonal)
- The application must not allow to play anymore if there is a winner.
- There will be a reset button that restarts the game.

Note: The X and O images are provided

Desired result



Poker Game

- Create a Poker game in a HTML page.
- Use HTML, JavaScript, and CSS.
- Not post back required (server side).
- The application must draw a 1x5 grid.
- The application must deal random cards, the card images are provided.
- The application must check for the following poker hands:
    - Flush: All 5 same suit

      Example

      
    - Straight: 4 sequential

      Example

      
    - One Pair

      Example

      
    - Two Pair

      Example

      
    - 3 of a kind

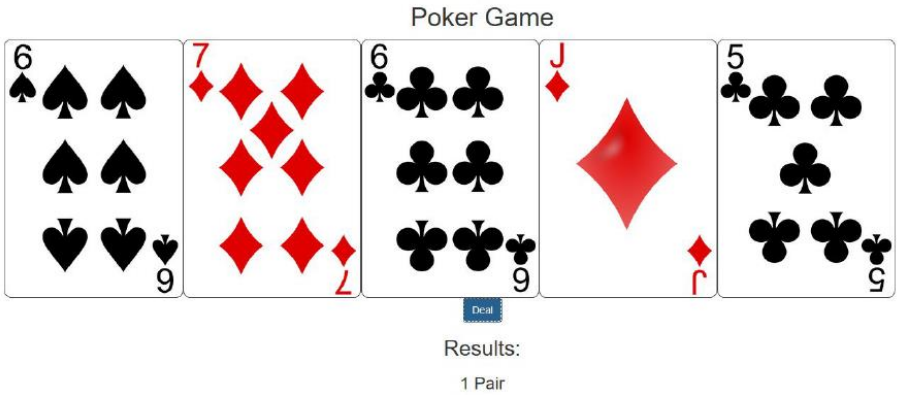
      Example

      
    - 4 of a kind

      Example

      
- There will be a “Deal” button that allows the user to get new cards.

Desired result



2. SQL

- Prerequisites:
  - You should need SQL Server Instance
  - Run the database setup script “DBSetup.sql”

You need to build the following SQL scripts:

Shipper Summary

- Write a query to return shipper performance, this will tell us how much the company is using each shipper.
- Database: StoreSample
- Involved tables: Shippers, Orders, OrderDetails
- No Discount for TotalCostShipped

Desired Output

```
CompanyName      TotalFreight    TotalCostShipped    TotalItemsShipped
-----------      ----------      ----------------    -----------------
Shipper ETYNR    28244.85        572724.58           19945
Shipper GVSUA    16185.33        373983.19           15919
Shipper ZHISN    20512.51        407750.82           15453

(4 row(s) affected)
```

Sales date prediction

- Write a query to return customer habit information. You will predict when the next purchase is going to happen based on the average of days between orders by customer.
- Database: StoreSample
- Involved tables: Orders, Customers

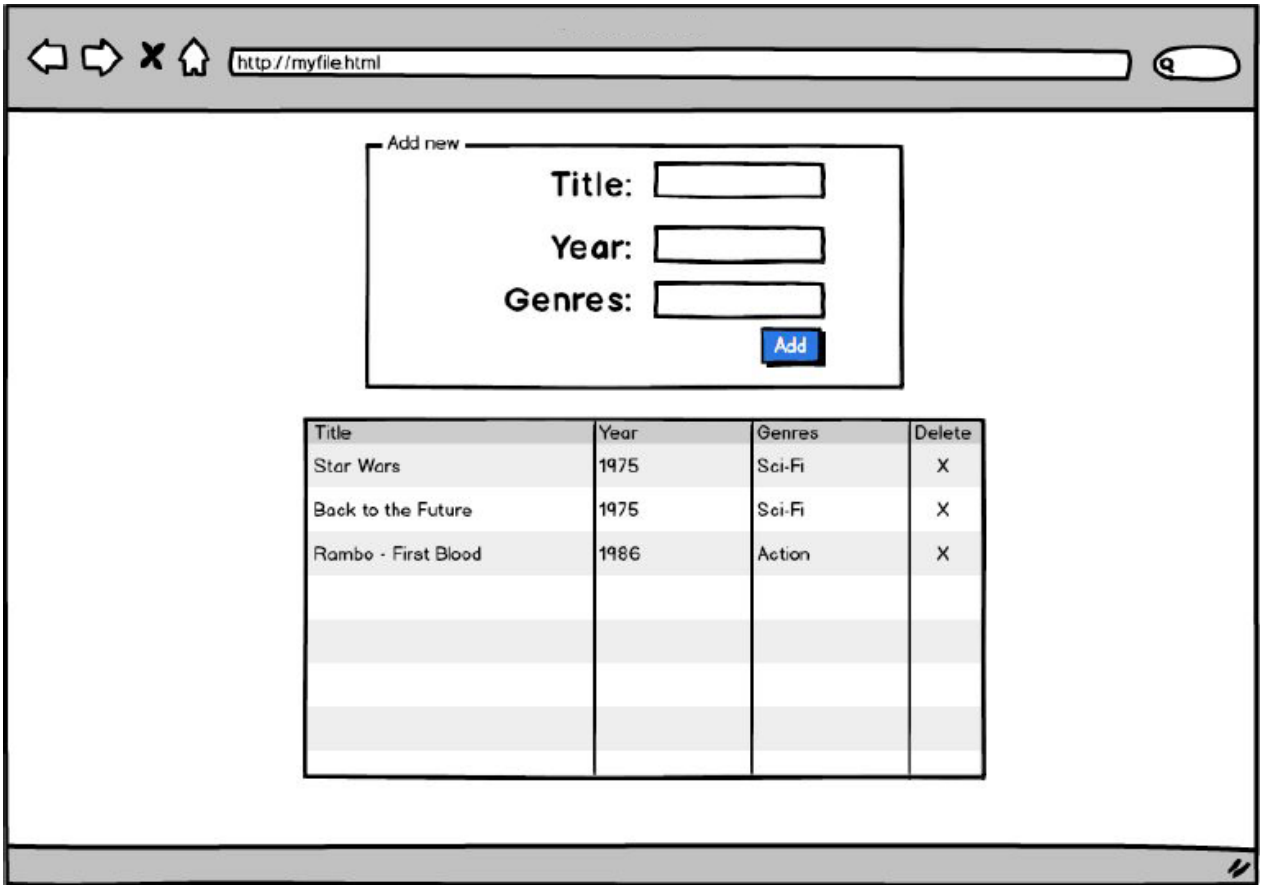
Desired Output

```
CustomerName     LastOrderDate             NextPredictedOrder
-----------      ----------                ------------------
Customer AHPOP   2008-02-04 00:00:00.000   2008-03-23 00:00:00.000
Customer AHXHT   2008-05-05 00:00:00.000   2008-08-09 00:00:00.000
Customer AZJED   2008-04-09 00:00:00.000   2008-05-20 00:00:00.000
```

3. JavaScript Frameworks

- Create a SPA (Single Page Application) using your preferred JavaScript framework (AngularJS, Angular, Vue.js, React, etc.) that manages movies.
- The movie fields are:
  - Title
  - Year
  - Genre
- The application must:
  - Show the movies list on a table.
    - The user can order by Year column.
  - Allow the user adding new movies through a movie form.
  - Allow delete movies from the list clicking on a delete icon.

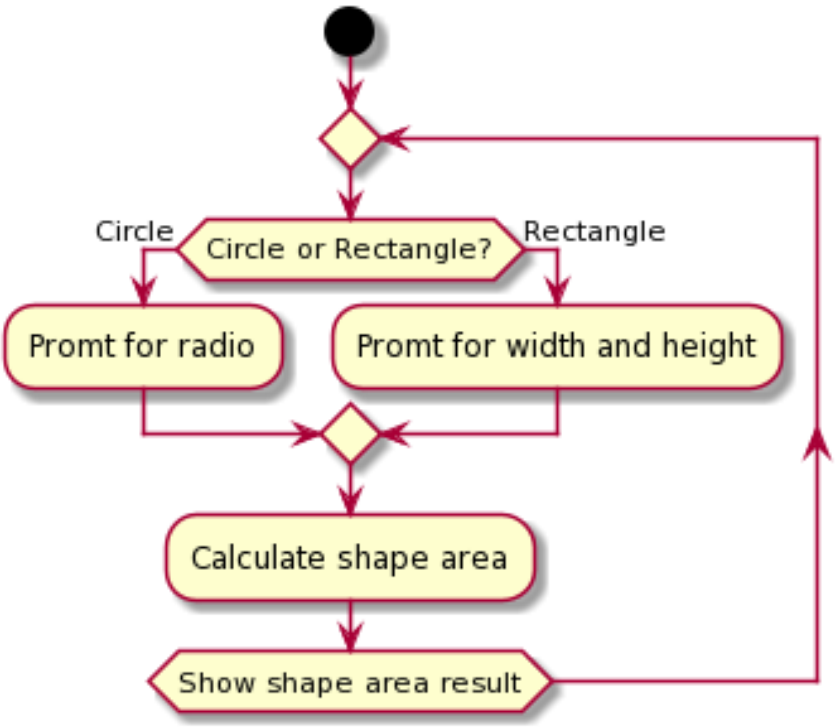
Desired result



4. C#

- Create a console application using C# (.Net Framework, .Net Standard or .Net Core)
- The application must calculate the area of two kind of shapes (Circle and Rectangle)
- Use an abstract class called ***Shape***
    - This class must have:
        - ***P1*** and ***P2*** properties of class type Point(int X, int Y)
        - Virtual method called ***GetArea*** that returns a double
- Create two classes (Circle and Rectangle), they should inherit from ***Shape*** abstract class
    - Those classes must override the ***GetArea*** method with the specific formula for each shape area
        - Circle: πr^2
        - Rectangle: $\text{Width} * \text{Height}$
    - **Note:** For circle, assume Y=0 for both points
- The application could be executed until the user closes the window

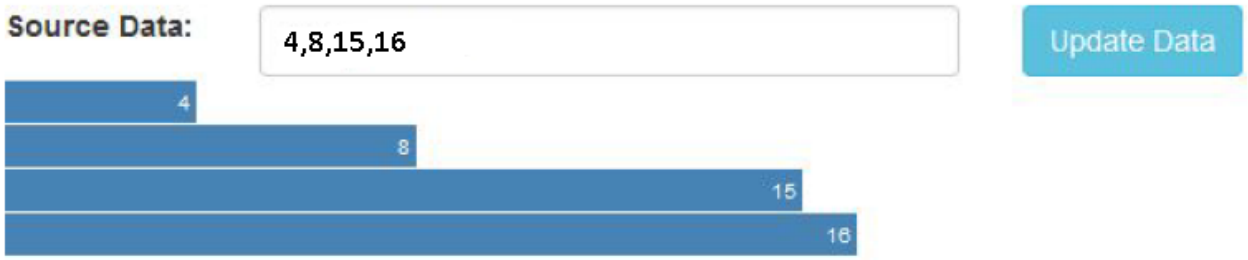
Console Application Flow



5. Charting with D3

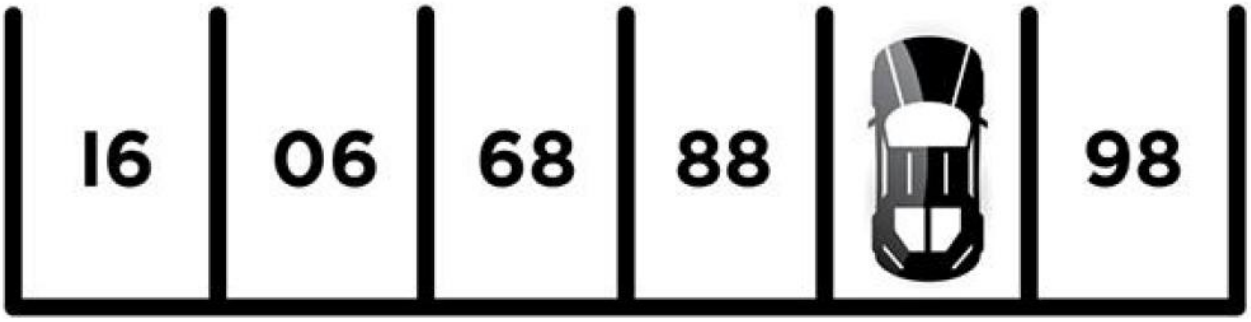
- Create a dynamic chart using D3.js
- Use CodePen.io for build your chart.
    - Load required dependencies like D3.js, bootstrap and jQuery if you need them.
- The application must have the following structure:
    - Source data text box: the user can set a comma separated numeric list.
    - Update data button: Once the user clicks on it, the application will split the source data values by comma and load the data on a bar chart using D3.
    - Chart: The bar chart loads one bar for each separated comma value from the Source data text box
- **Note:** You only need to send us the CodePen URL

Desired result

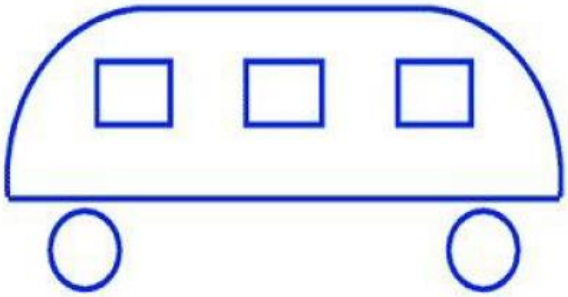


6. Abstract reasoning

What is the car parking number?



Which side is the front of the bus?



Reverse the direction of the triangle moving just three circles.