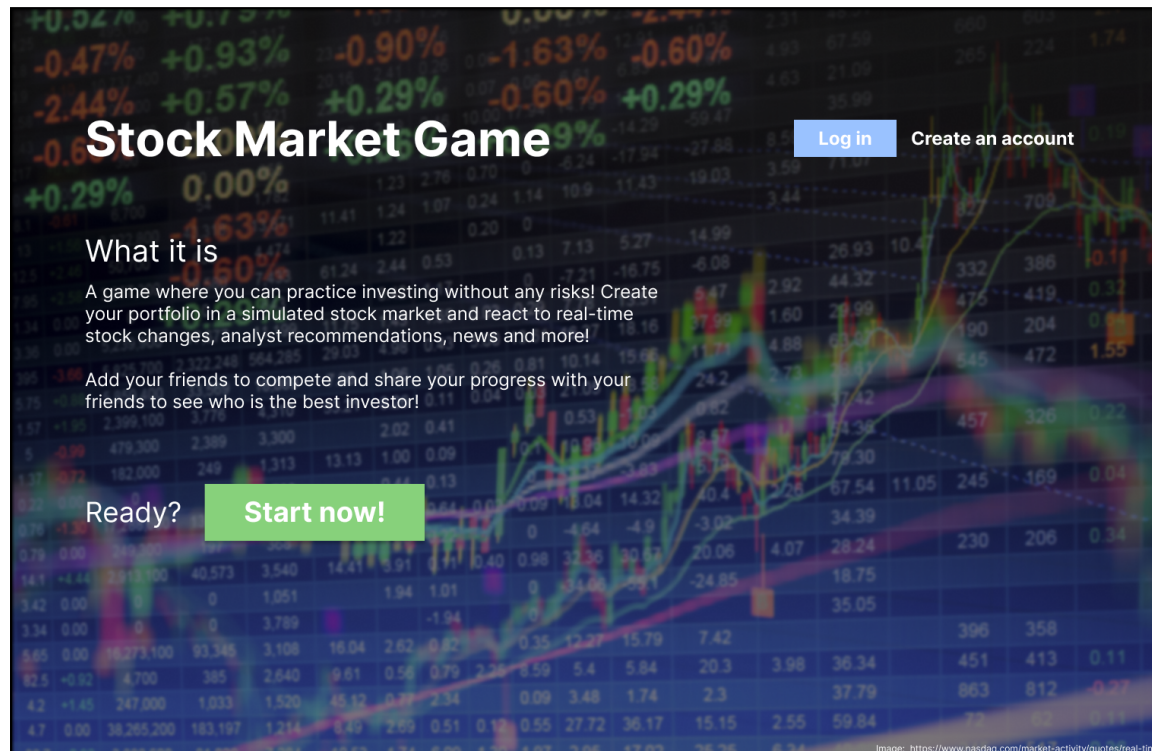**Design II – Group 5**
Project: Virtual stock market game
Members: Lance Aguilar, Josh Ho, Justin Nelson, Michael Pigeon, Pierre Sarabamoun

UI Design
To view the screens in full resolution, you can go to:
https://www.figma.com/file/Iex6Gm6OYTI8FBMgyLaiLD/Design-II-Mockups?node-id=22%3A2

Screen 1: homepage

Screen 2: login page

Stock Market Game

Welcome back!

Please login to continue.

Username

Password

Forgot Password?

Login

Screen 3: dashboard

Stock Market Game

Buy Premium

Q Find new stocks

Sign Out

Your Dashboard   See growth over time

Initial Balance: $2,000.00
Current Balance: $1,234.56
Portfolio Value: 12,345.67

Goal: $20,000.00   ⬆ Share to social media

Friends

Friend 1's name
Portfolio Value: 123,456.78   👥

Friend 2's name
Portfolio Value: 123,456.78   👥

Add a friend   View all friends   Copy friend link

Your Investments   🔔 Notifications

AAPL: $3,200.00   Up $234.00   ⬆   Trade

TSLA: $4,000.00   Up $200.00   ⬆   Trade

NFLX: $5145.67   Down $120   ⬇   Trade

News   View all news

Article 1

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Article 2

Screen 4: personal portfolio

Stock Market Game

🔍 Find new stocks

Sign Out

Return to dashboard 🏠

Personal Portfolio
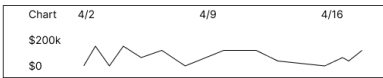
Cash balance: $0.00
Investments value: $12,345.76

Portfolio value over time

Chart	4/2	4/9	4/16
$200k			
$0			
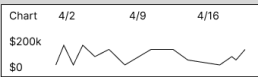
Benchmark goal: $1,000,000.00

Stock 1 name
$???.?? Invested on ??/??
Current value: ???.???
??? stocks owned

Chart	4/2	4/9	4/16
$200k			
$0			

Buy Quantity

BUY

Sell Quantity

SELL

P/E Ratio: ?
Dividend yield: ?
Volume: ?
Market Cap: ?

Stock 2 name
$???.?? Invested on ??/??

Buy Quantity

Screen 5: buy premium page

Stock Market Game

Buy Premium

Removes ads forever.
Only $XX.XX

Enter Payment

Enter credit card number
CVN
Expiration Date
Name on Card

Purchase

Return to dashboard 🏠

Screen 6: news articles page

Stock Market Game

🔍 Find new stocks

Sign Out

Return to dashboard 🏠

News

Article 1 ⬆️

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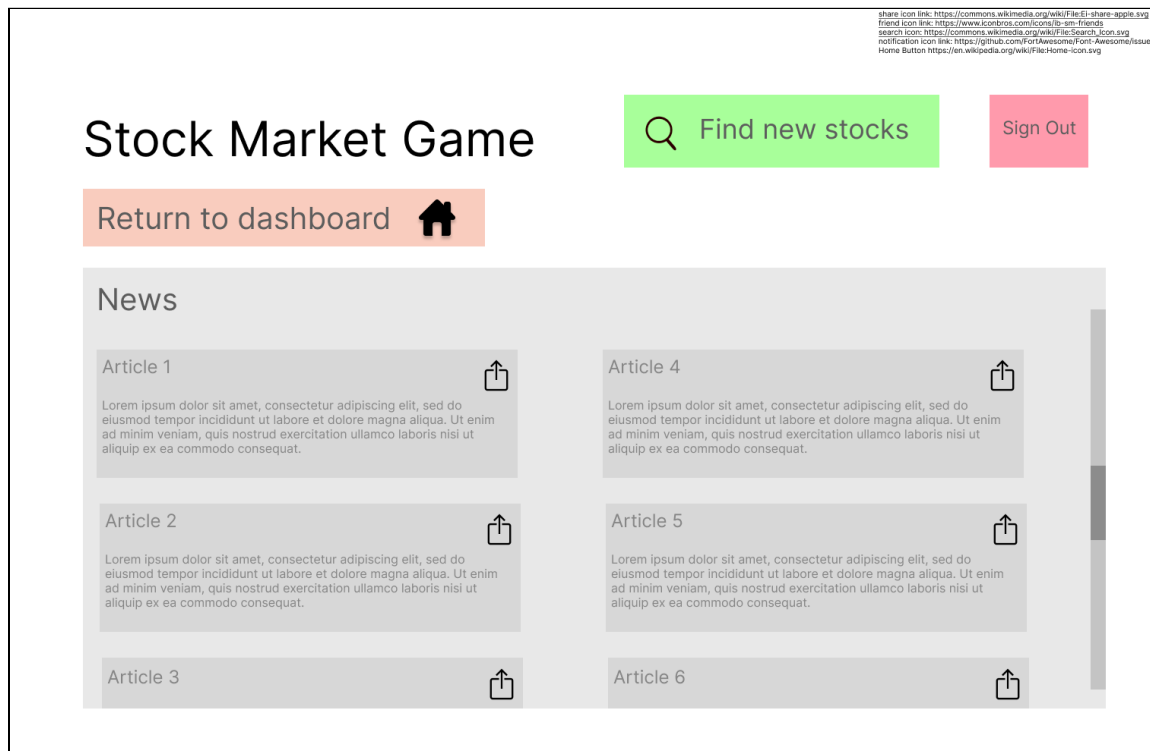
Article 4 ⬆️

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Article 2 ⬆️

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Article 5 ⬆️

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Article 3 ⬆️

Article 6 ⬆️

Algorithms

Searching for Stocks:

```
searchForStock(search: String, availableStocks: List)

FOR int i from 0 to the length of availableStocks:
        IF name of stock at index i equals search:
                return stock at index i
        ENDIF
END

return NO_STOCK_FOUND
```

Sorting stocks based on search criteria:

```
sortStocks(availableStocks: List)

LET temp = first stock in availableStocks list
LET min = first stock in availableStocks list
LET place = 0
FOR int i from 0 to the length of availableStocks:
        FOR int j from i to the length of availableStocks:
                IF sort criteria of min < sort criteria of stock at index j
                        LET place = index j
                        LET min = stock at index j
                ENDIF


                temp = availableStocks[i]
                availableStocks[i] = min
                availableStocks[place] = temp

        END
END

return availableStocks
```

Relevant news articles for respective stocks:

```
getNews(stock: Stock, newsArticles: List)

LET newsList = new list
FOR int i in 0 to length of newsArticles list
        LET tags = newsArticles[i]'s list of tags
        LET relevanceCounter = 0
        FOR int j in 0 to length of stock's tag list
                IF tags contains tag from stock's tag list at index j
```

```
                    relevanceCounter++
            ENDIF
        END

        IF relevanceCounter >= 3
            add newsArticle[i] to newsList
END

return newsList
```

Display Ads or Not:

```
determineAdDisplay()

IF valid_ad_page (The current page user is on has a spot to display an ad):

IF ad_free_version = false:

            FOR all advertisements stored:

                        IF user clicked "don't view this ad anymore" on this specific add
            before:

                                    SKIP ad

                        END IF

                        IF ad payment is up to date from advertiser:

                                    DISPLAY ad

                                            END loop

                        END IF

            END FOR

            END IF

END IF
```

Friend's List Recommendation:

```
friendsRecommendation()

IF user_contact_permissions = 1:
```

```
LET list_on_app to hold contacts

        FOR each contact:

                IF contact.number registered:

                        ADD contact TO list_on_app

                END IF

    END FOR

    DISPLAY list_on_app

END IF

ELSE

        DISPLAY "Allow contact permissions to view people you know on this app too!"

END ELSE
```

Displaying Portfolio Information:

```
displayPortfolioInfo()

SET theme = green

IF beginning_day_total > end_day_total:

            SET theme = red

END IF

SET total_amount_diff = beginning_day_total - end_day_total

SET total_percent_diff = (beginning_day_total - end_day_total)/beginning_day_total

LET stock_list for stock changes

FOR each stock owned

            SET stock_theme = green

    IF beginning_day_stock > end_day_stock:

                SET stock_theme = red

    END IF
```

```
          SET stock_amount_diff = beginning_day_stock - end_day_stock

          SET stock_percent_diff = (beginning_day_stock -
          end_day_stock)/beginning_day_stock

                  LET stock(theme, stock_amount_diff, stock_percent_diff,
beginning_day_stock) (stock object)

                  ADD stock TO stock_list

END FOR

IF stock_list.length <= 1:

                  DISPLAY stock_list

END IF

ELSE

                  DISPLAY "There are no stocks in your portfolio"

END ELSE
```

Buying/Selling Stocks:

```
BuyStock(User, Stock ID, amount):
        WHILE amount > 0:
                ADD Stock ID to User's List of Stocks
                SUB Stock price from account balance
                SUB 1 from amount
        END WHILE

SellStock(User, StockID, amount):
        WHILE amount > 0:
                IF User's List of Stocks has remaining stocks matching StockID
                        REMOVE StockID from User's List of Stocks
                        ADD Stock Price to account balance
                        SUB 1 from amount
                END IF
                ELSE
                        DISPLAY "Number of stocks attempted to sell greater than the amount
owned. All stocks sold"
                END ELSE
        END WHILE
```

Stock Recommendation Algorithm:

```
RecommendStock(User):
        INITIALIZE Recommended List of Stocks
        INITIALIZE List of Categories
        FOR each Stock in User's Stock List:
                DETERMINE category of stock
                ADD 1 to category value in list of categories
        END FOR
        SORT List of Categories by Value (Occurrence)
        FOR each Category in List of Categories:
                GET Categories List of Stocks
                SORT Category List of Stocks by shares owned
                FOR x = 0 to 3:
                        GET Stock(x) from Category List of Stocks
                        ADD Stock to Recommended List of Stocks
                END FOR
        END FOR

        Return Recommended List of Stocks
```