Project Description: Ticket to Ride

Objective:

The objective of this project is to develop an auction system that will allow bidders to place an initial and max bid. The students will utilize a Java **Stack** data structure to represent the bidders participating in the auction along with images to represent those bidders.

Project Overview:

In this project, students will create a **Stack**-based system where the stacks will hold both the bidders and images for the bidders. As this project leverages both images and GUI controls, a code template will be provided and used to complete the project.

Requirements:

1. **Classes and Data Structures:**

    - **Auction and Auction GUI:**
        - The driver class for this project, it is responsible for creating the GUI window that students will be using to collect and display information to and from the user
        - Code for these classes is complete and does not require any modification unless students wish to change appearance or add additional functionality
    - **Bidder**:
        - An object class which represents the individual bidders by tracking information such as name, id numbers, and the actual bids of the individuals
        - The stacks will be filled with this object type
        - Code for this classes is complete and does not require any modification unless students wish to add additional functionality/information to the bidders
    - **BidderPanel**:
        - This class is responsible for loading and displaying the images onto the GUI
        - One of the first steps students will take for this project is to create a folder of images to represent the bidder, as described in the project the files should be set to the same size and have a similar naming convention
        - The following methods will need to be completed as part of this project:
            1. paintComponent
            2. addBid
    - **ControlsPanel and ActionHandler**:
        - This class is responsible for the functionality of the GUI by collecting and processing user input

    - The following methods will need to be completed as part of this project:
        1. ControlsPanel constructor
        2. ActionPerformed
        3. addToStack

2. **Operations:**

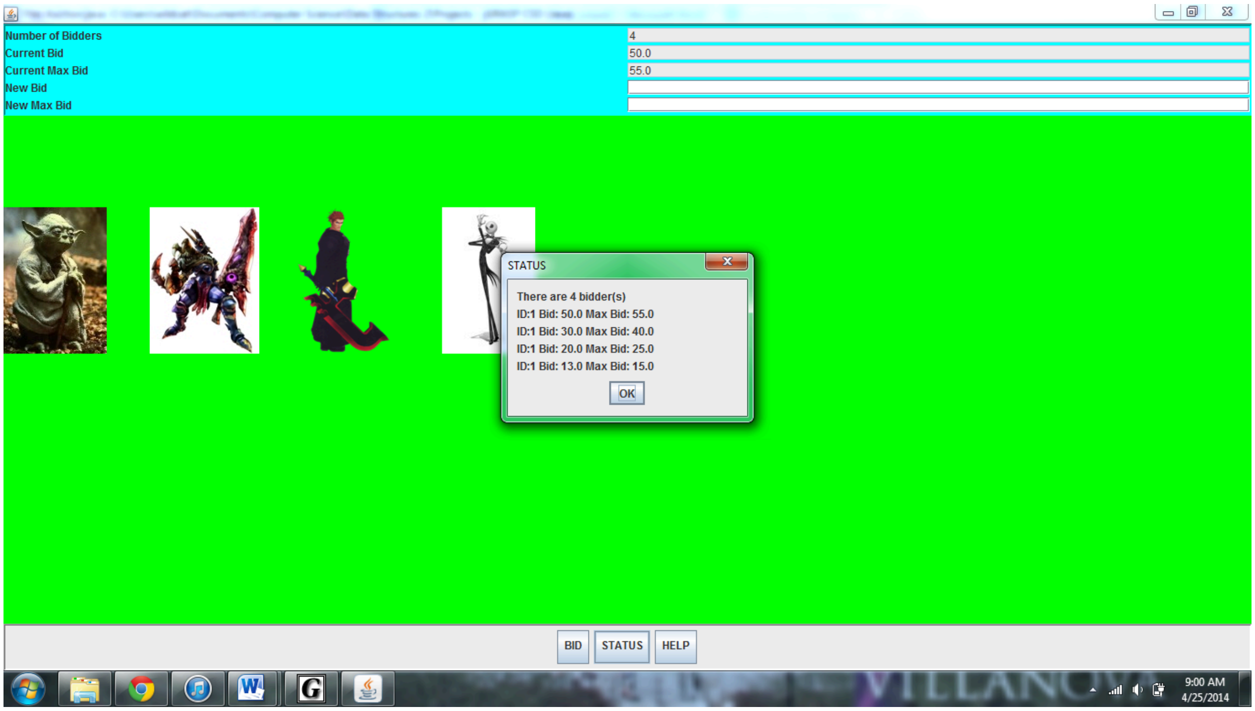
    - **Bid**:
        - Collects the information from the New Bid and New Max Bid fields to determine if the new bidder becomes the lead bidder, if so the bidder is created and the image updated
    - **Status**:
        - Creates a dialog box displaying the information of all the bidders in the stack
    - **Help**:
        - Creates a dialog box displaying the instructions for the user

3. **Optional Advanced Features (would need to create the buttons and update the GUI for each of these):**

    - **Text file creation**: Status output is sent to a text file
    - **Restart**: Clears all fields and resets the stack to empty

Example Output:

Unset



Number of Bidders 4
Current Bid 50.0
Current Max Bid 55.0
New Bid
New Max Bid

STATUS

```
There are 4 bidder(s)
ID:1 Bid: 50.0 Max Bid: 55.0
ID:1 Bid: 30.0 Max Bid: 40.0
ID:1 Bid: 20.0 Max Bid: 25.0
ID:1 Bid: 13.0 Max Bid: 15.0
```

Grading Criteria:

- **Correctness of the Stack Implementation**: The system should correctly implement a Stack to manage the bidder and images.
- **Bidding Algorithm**: The algorithm used to determine if a bidder should be added to the stack. Should account for exception handling (ie if a user enter a value that is lower than the current max bid)

Submission Requirements:

- **Java Code**: Submit the full implementation of your project (Java source code files, include all of them even the ones that originally work).
- **Documentation**: Include a brief report explaining your design choices, the classes you implemented, and how the program works. Give extra focus to your bid method. This documentation should also include a work log of how work was split between you and your group members.
- **Test Cases**: Provide a few screenshots of sample inputs and outputs, demonstrating that the system works as expected. You can include these in your report document.