CSCI 201L Assignment #5 – Part 2

4.0% of course grade

Factory

Description

You have a working factory from A5 – Part 1. It is time to add on some new features. In this assignment, you will take orders from clients. When orders are completed, you will earn money, and with this you can buy more materials and tools for the factory, as well as workers.

Topics Covered

Networking

Multi-Threading

Requirements

You will need to create a new program for clients of the factory. This will be controlled from a real person to order things from your factory. You must be able to receive orders from the client program, create the item, and notify the client that their item has been made. Your factory program must also save its information (number of tools/workers/materials). If clients are closed during execution, you can assume the client has canceled their order – materials will be refunded.

Progression

Part 1 – Setting up the initial factory

- Remove the File Chooser – you will keep a .factory file in your programs /src folder that will be used for every execution. If there is no .factory file in the /src folder, generate one.

The start .factory file will look like this:

[Money:100]

[Workers:0]

[Hammers:0]
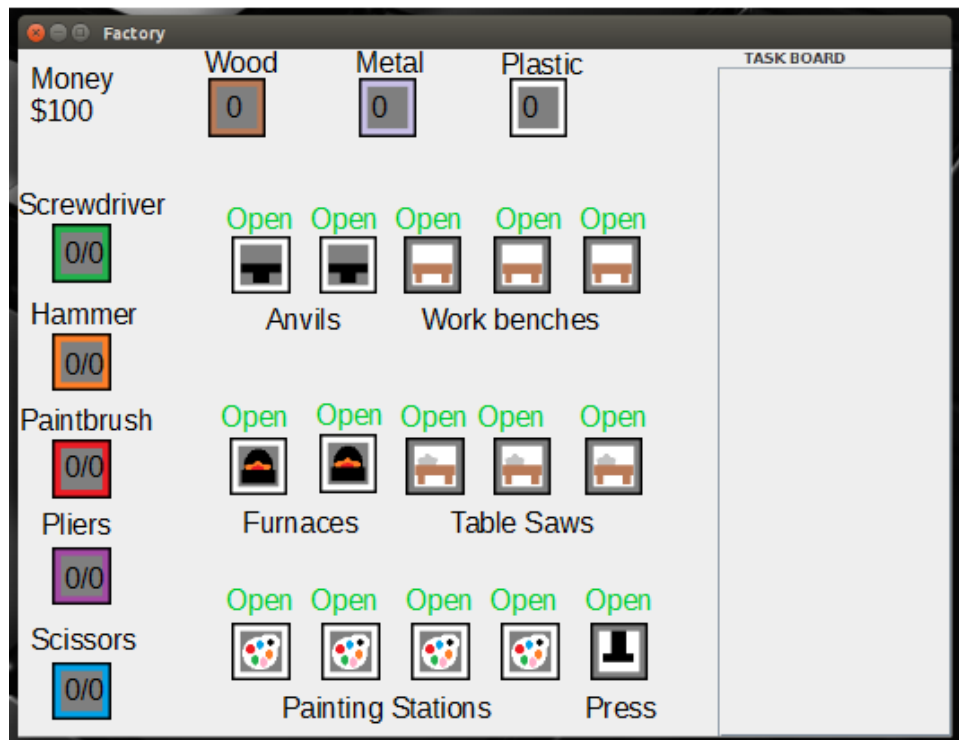
[Screwdrivers:0]

[Pliers:0]
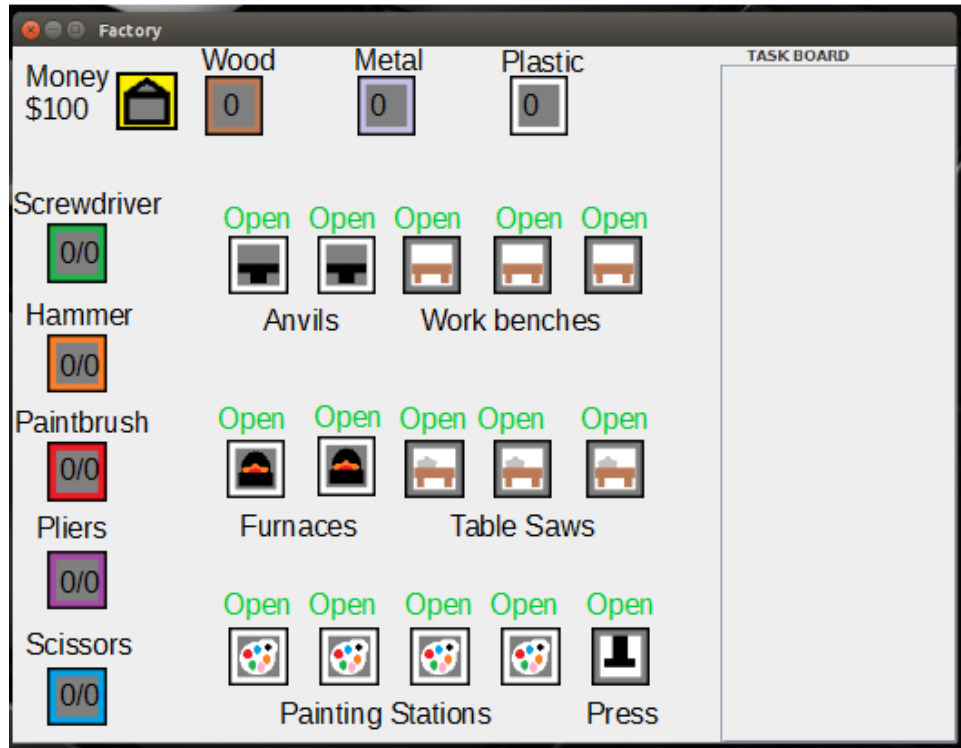
[Scissors:0]

[Paintbrushes:0]

[Wood:0]

[Metal:0]

[Plastic:0]

- You may have noticed that "Money" is new, go ahead and create a label for money.
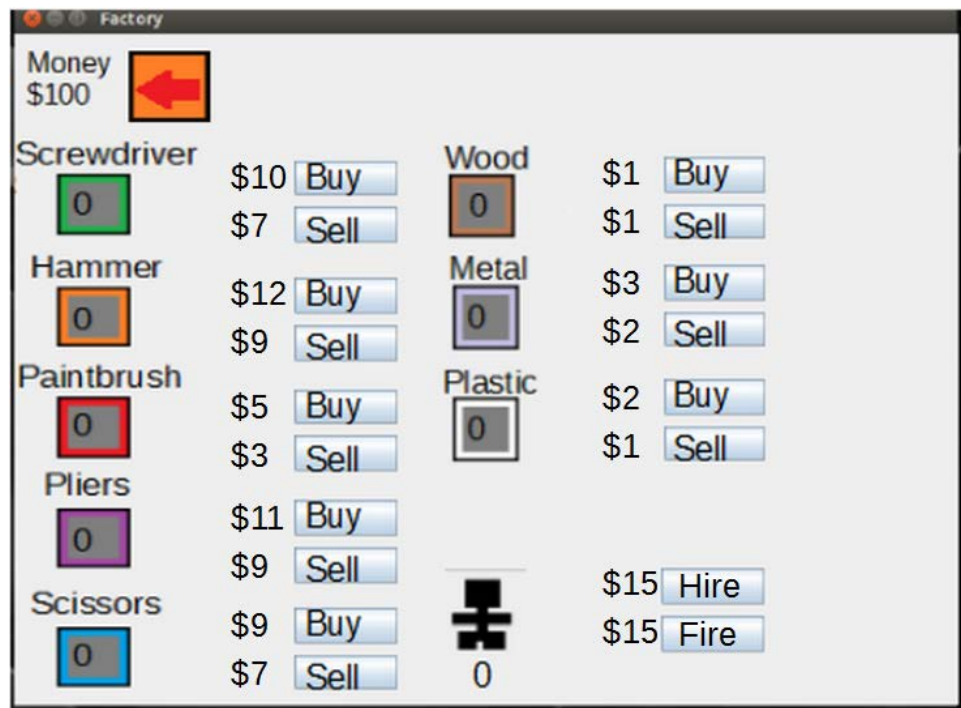- An example of what your program should look like is shown below:

Part 2 – Adding the supply store

- Add a store button.
- When the store button is clicked, a store menu will appear.

- Keep in mind that although the factory isn't visible - everything should still be happening behind the scenes.

- The store will look like the image below:

- The amount displayed are the total amount your factory has.
- When you buy, simply add the tool to the tool shed.
- However, make sure that the worker isn't currently using a tool you are trying to sell.
- Also, when firing a worker, let the worker finish it's current task.

Part 3 – Setting up the client program

- Create a new Java Application.
- This application will look like the order form below:

- If the user presses "+" a new direction will be generated like in the image below.

- When "Request" is pressed, the application will send a generated .rcp file to the main factory program.
- The client will then display "Waiting for response..." as shown below:
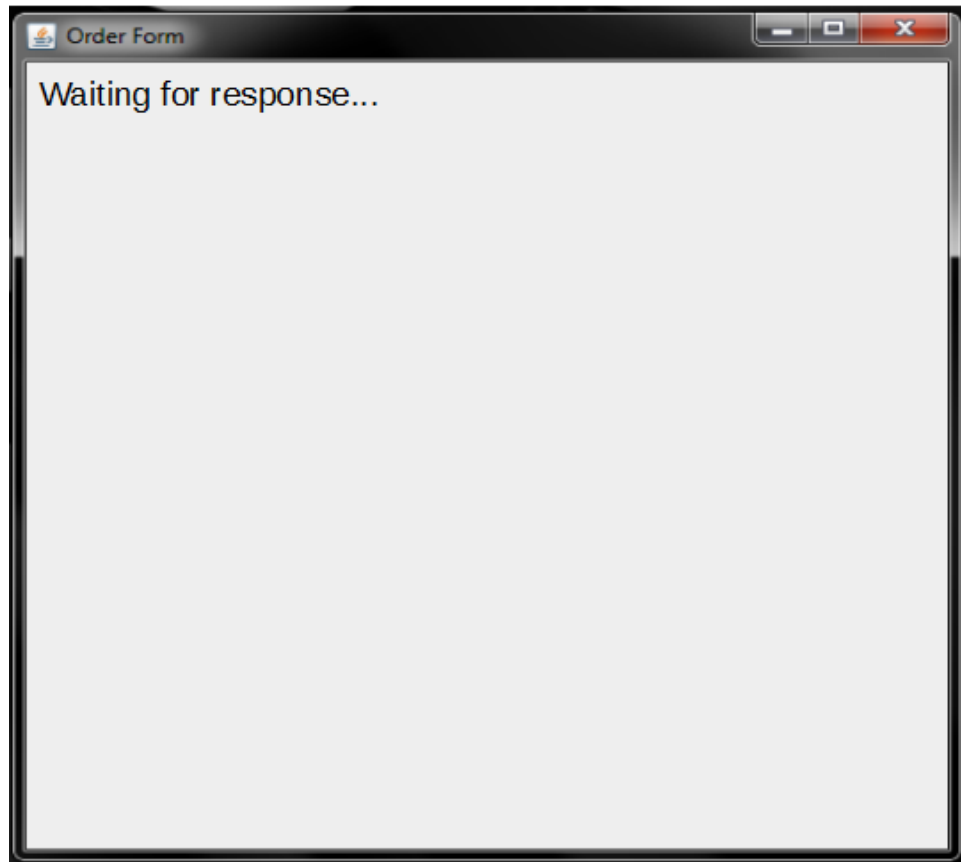
- You will have to check for form correctness.
  - o Invalid cases:
    - ▪ If there is a blank Item or Cost.
    - ▪ No Materials/ number of materials are not an integer.
    - ▪ There is no location selected.
    - ▪ There is no amount of time/ number of seconds is not a number.
    - ▪ The Use is mismatched, meaning there is an amount but no tool, or vice versa.
  - o It is valid to have blank fields for Use.
- An example is shown below with a corresponding .rcp that would be generated.

[Widget:$22]

[Plastic:2]
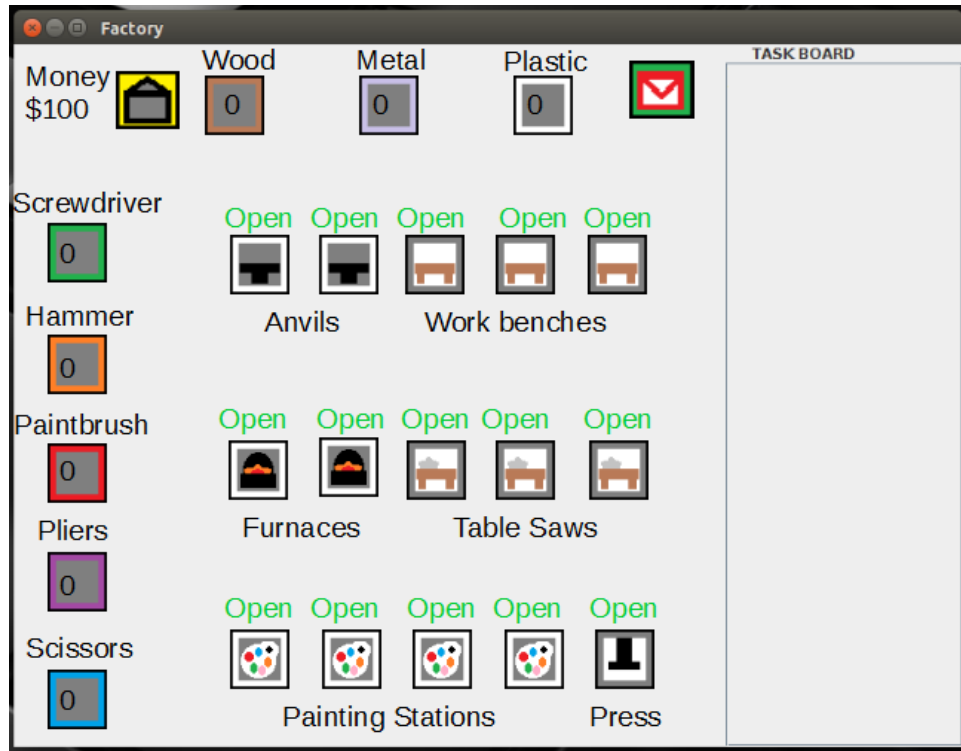
[Metal:1]

[Use 4x Hammers at Anvil for 3s]

[Use Press for 4s]

[Use 2x Pliers and 3x Screwdrivers at Workbench for 12s]

[Note]: .rcp files will no longer have an amount to make - instead they will have a cost.

Part 4 – Accepting and denying client orders

- Add an orders button.

- When clicked, a menu should replace the current screen. Note that everything should continue running in the background. The factory will not pause.
- If orders have been requested from the client, they will be displayed here.
- The details about the order will be displayed next to "Accept" and "Decline" buttons.
- An example of the Orders page is shown below: (Showing two orders)

- If Accept is chosen, workers in the factory will begin to build the item and notify the client that their request has been accepted. Otherwise, the client will be notified that their order was declined. Either way, remove the order from the request page.

- If there are too many orders to fit, a scroll bar must be used to accommodate them.
- Update the client's message to "Request Accepted" or "Request Denied".

- If the request was denied, add a "Back" button below the message. The client will return to the order form – with the previous information filled out. This way, the client can try again.

Order Form

Request Accepted!

Order Form

Request Denied!

Back
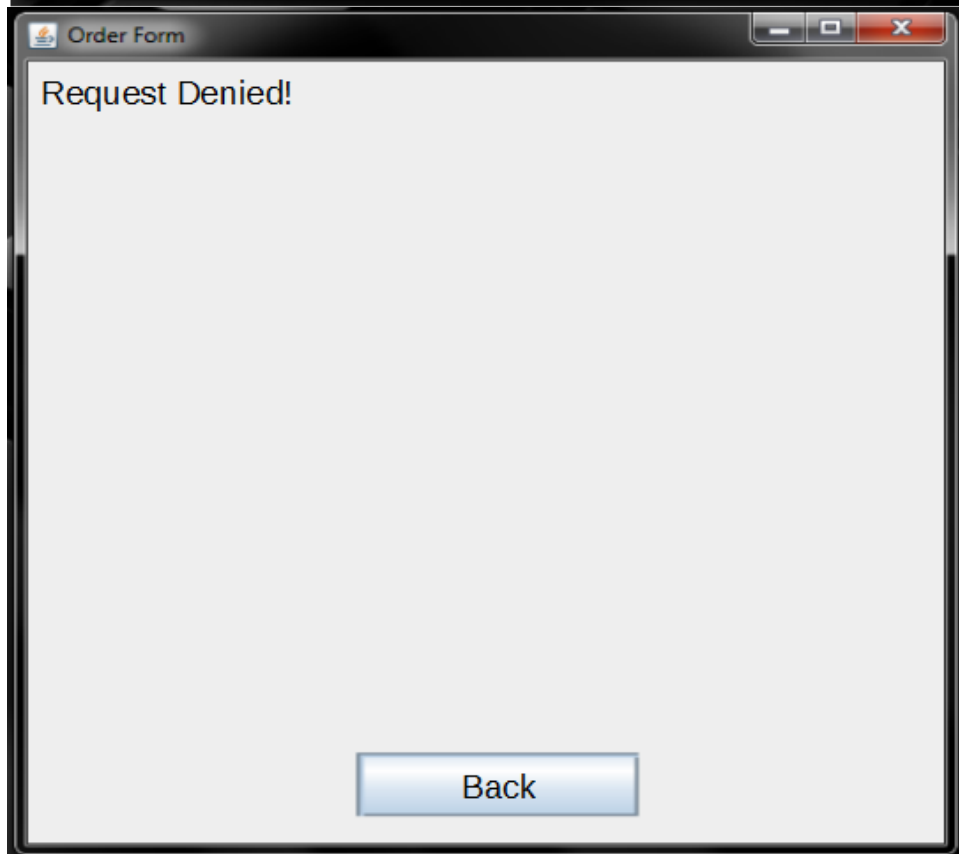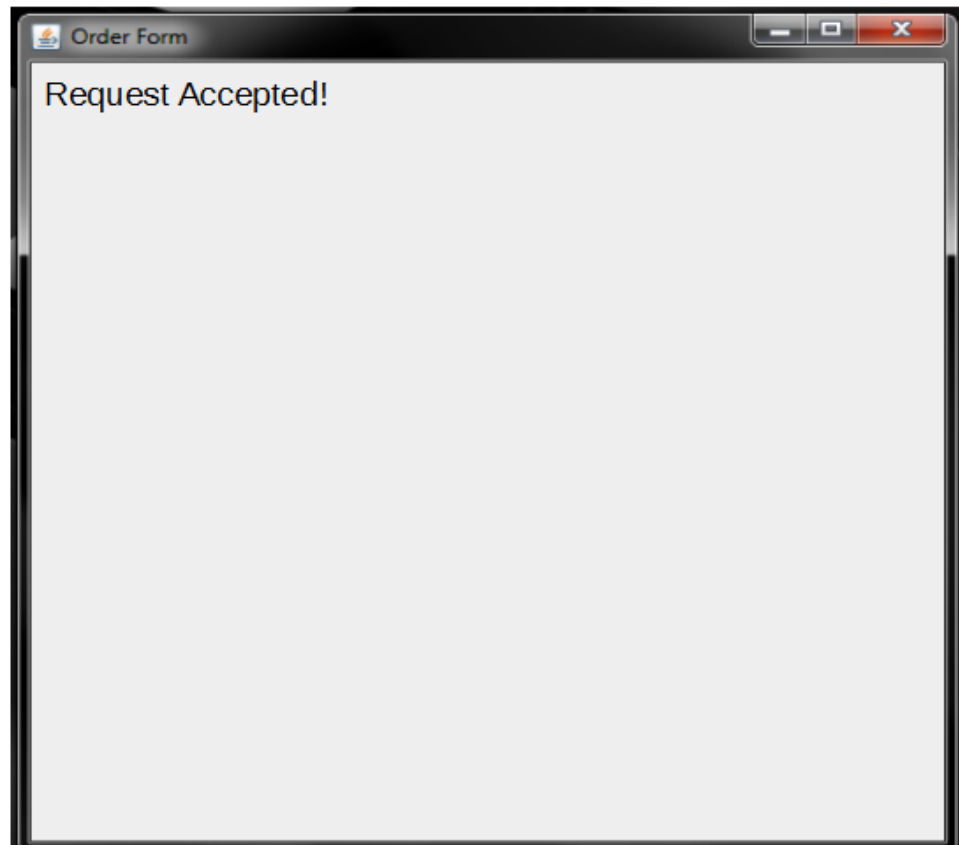
Part 5 – Completing orders

- Most of this you have already done. Workers should be able to make items in the task list.
- When an order is accepted, make sure to put it in the list and notify the workers that there is something ready to be made.
- This time, instead of putting "Complete" next to the item, remove it from the Task List.
- Add the amount of money the client offered to your current balance.
- Once the worker completes the item, notify the client that sent the request along with a URL of an image. You will have to pull the first result from Google.
- You will use: https://ajax.googleapis.com/ajax/services/search/images?v=1.0&q=
- following the = is the name of the item you created.
- [Example]: If you made a cog, you will use https://ajax.googleapis.com/ajax/services/search/images?v=1.0&q=cog
- This URL will give you a JSON file that contains the URL of the image, send the URL of the image – not the query – to the client.
- The client will display "Order complete!" along with the image. The client will also have a button "Done" below the image, this will exit the program.

Grading Criteria
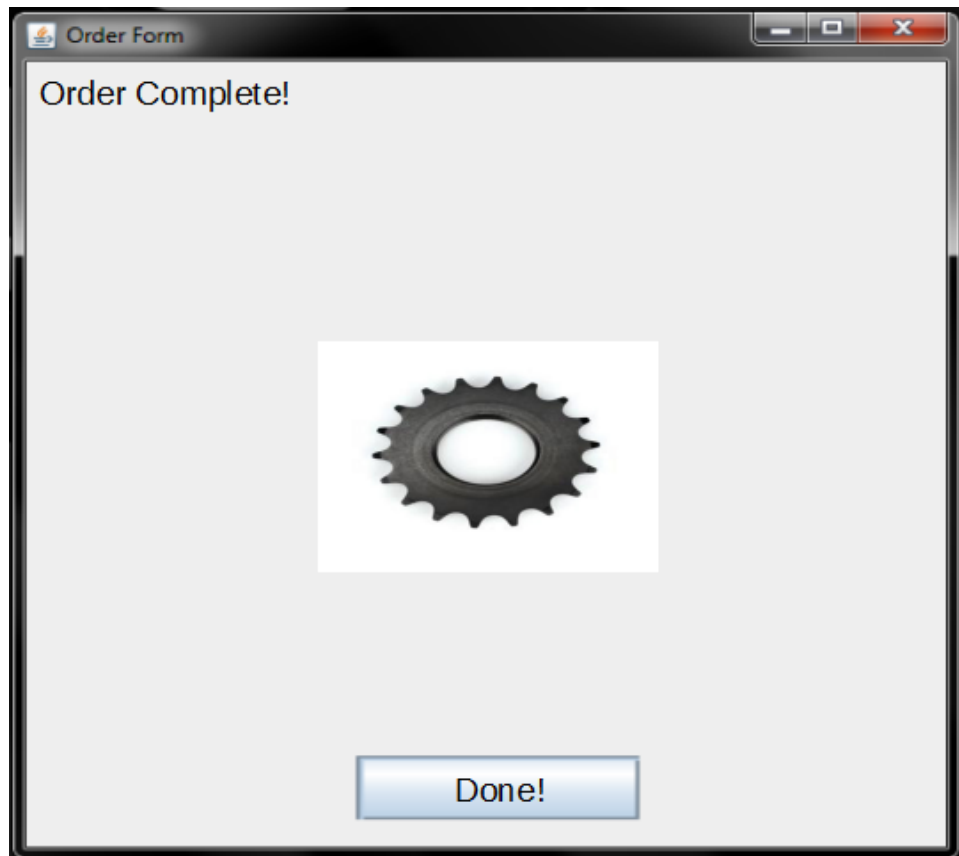
% Of Grade	Requirement
1% - Store	
0.3%	Can buy goods from the store.
0.7%	Can sell goods to the store, without worker conflict.
1% Factory Orders	
0.5%	Order page displays all orders with scrollbar if needed.
0.5%	Shows the appropriate information for each order.
1% Client Orders	
0.5%	Can add/remove instructions as necessary.
0.5%	Updates based on the factories response.
0.5% New Behavior Implemented	
0.1%	Items removed from task list once complete.
0.1%	File Chooser removed, replaced with store/inbox buttons.
0.3%	Workers are functional while buying/selling
0.5% Order Complete	Order Complete sends image from google image results.