

Name: William Crutchfield

Date: 03/09/19

Course: CMSC 335 – Object-Oriented and Concurrent Programming

Project: 4

1 Source code, data files, and configuration files (if any)

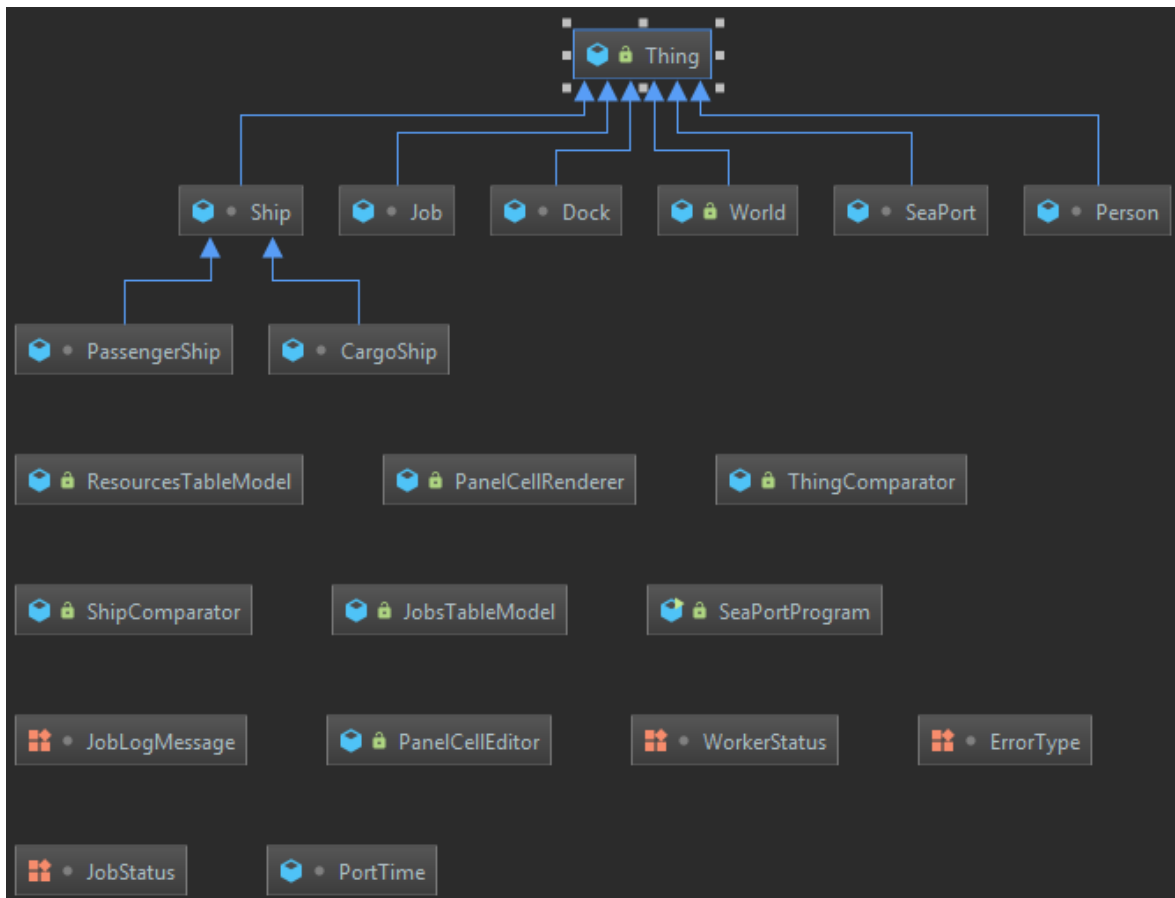
Insert a zipped file of NetBeans ALL project files (so that it could be unzipped and loaded into NetBeans IDE again), zipped file of all data files, and zipped file of configuration files (if any). :



SeaPort-Project.zip

2 Design

Insert here UML Class diagram, explain classes, variables, methods, explain how classes tie to the requirements of the project:



The main difference in this UML Diagram compared to the previous project, is that we have 5 new classes, **ResourcesTableModel**, **JobLogMessage**, and **WorkerStatus**, **ErrorType**, and **JobStatus**. **JobLogMessage**, **WorkerStatus**, **ErrorType**, and **JobStatus** are all enum classes that are used

	<p>throughout the project. Both <code>ErrorType</code>, and <code>JobStatus</code>, were implemented in Project 3, but they did not have distinct classes. <code>WorkerStatus</code> is used to determine if a worker is busy and affects the GUI label for each worker. <code>JobLogMessage</code> is used to determine which message should be added to the log for the pertaining job. The last class, <code>ResourcesTableModel</code>, defines the <code>JTable</code> that is used to hold all GUI components for all of the resources.</p>								
3	<p>User Guide</p> <p>Explain how a user starts & runs your project, and any specific features with screenshots:</p> <p>In order to run this project, download the <code>src.zip</code> file and extract. Once extracted, open the <code>src</code> files up in any IDE. Lastly, run the <code>SeaPortProgram.java</code> file.</p>								
4	<p>Test Plan</p> <p>Complete this table and extend it with your test cases:</p> <hr/> <p>Test Case 1:</p> <table> <tr> <td>Test Case:</td><td>Jobs will be Canceled if requirements can not be met. Jobs will allocate the appropriate amount of resources. Jobs will wait for resources if they are in use. Jobs will deallocate resources upon completion.</td></tr> <tr> <td>Selected Input:</td><td>aSPad2.txt – a much shorter version of aSPad.txt for testing</td></tr> <tr> <td>Expected Output:</td><td>Job_24_68_13 will be canceled immediately due to lack of resources. Either Job_50_35_84 or Job_24_68_12 will claim both available drivers, and execute. After completion, the other will take both drivers and execute.</td></tr> <tr> <td>Actual Output:</td><td></td></tr> </table>	Test Case:	Jobs will be Canceled if requirements can not be met. Jobs will allocate the appropriate amount of resources. Jobs will wait for resources if they are in use. Jobs will deallocate resources upon completion.	Selected Input:	aSPad2.txt – a much shorter version of aSPad.txt for testing	Expected Output:	Job_24_68_13 will be canceled immediately due to lack of resources. Either Job_50_35_84 or Job_24_68_12 will claim both available drivers, and execute. After completion, the other will take both drivers and execute.	Actual Output:	
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SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot

Log Search Results

03/09/2019 15:11:57:180 | ARRIVED at Pier_1. - Ship Fecundation
03/09/2019 15:11:57:180 | DEPARTED Pier_4. - Ship Yeah
03/09/2019 15:11:57:180 | ARRIVED at Pier_4. - Ship Sphere
03/09/2019 15:11:57:180 | DEPARTED Pier_0. - Ship Glory
03/09/2019 15:11:57:181 | RESOURCE NOT AVAILABLE: driver - Ship Suites
03/09/2019 15:11:57:182 | Display Update Success
03/09/2019 15:11:57:183 | Job_24_68_13 has STARTED. - Ship Suites
03/09/2019 15:11:57:184 | Job_24_68_13 has been CANCELED. - Ship Suites
03/09/2019 15:11:57:184 | RESOURCE NOT AVAILABLE: driver - Ship Fecundation
03/09/2019 15:11:57:184 | Job_50_35_84 has STARTED. - Ship Sphere
03/09/2019 15:11:57:184 | DEPARTED Pier_2. - Ship Suites
03/09/2019 15:11:57:185 | RESOURCE NOT AVAILABLE: driver - Ship Fecundation

Jobs Resources

Port	Ship	Name	Status	Progress	Pause	Cancel
Sialkot	Suites	Job_24_68_13	CANCELED	0%	Pause	Cancel
Sialkot	Fecundation	Job_24_68_12	WAITING	0%	Pause	Cancel
Sialkot	Sphere	Job_50_35_84	RUNNING	6%	Pause	Cancel

Expand All Collapse All

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot

Log Search Results

03/09/2019 15:11:57:180 | ARRIVED at Pier_1. - Ship Fecundation
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03/09/2019 15:11:57:185 | RESOURCE NOT AVAILABLE: driver - Ship Fecundation

Jobs Resources

Port	Name	Skill	Status	Current Location
Sialkot	Tina	painter	AVAILABLE	Port: Sialkot
Sialkot	Cody	electrician	AVAILABLE	Port: Sialkot
Sialkot	Oliver	clerk	AVAILABLE	Port: Sialkot
Sialkot	Terri	driver	WORKING	Ship: Sphere
Sialkot	Phillip	driver	WORKING	Ship: Sphere
Sialkot	Otis	mate	AVAILABLE	Port: Sialkot
Sialkot	Charlotte	carpenter	AVAILABLE	Port: Sialkot
Sialkot	Eileen	captain	AVAILABLE	Port: Sialkot

Expand All Collapse All

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot

Log Search Results

03/09/2019 15:11:57:180 | DEPARTED Pier_0. - Ship Glory
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03/09/2019 15:11:57:184 | DEPARTED Pier_2. - Ship Suites
03/09/2019 15:11:57:185 | RESOURCE NOT AVAILABLE: driver - Ship Fecundation
03/09/2019 15:12:38:434 | Job_50_35_84 has FINISHED. - Ship Sphere
03/09/2019 15:12:38:434 | DEPARTED Pier_4. - Ship Sphere
03/09/2019 15:12:38:434 | Job_24_68_12 has STARTED. - Ship Fecundation

Jobs Resources

Port	Ship	Name	Status	Progress	Pause	Cancel
Sialkot	Suites	Job_24_68_13	CANCELED	0%	Pause	Cancel
Sialkot	Fecundation	Job_24_68_12	RUNNING	3%	Pause	Cancel
Sialkot	Sphere	Job_50_35_84	DONE	100%	Pause	Cancel

Expand All Collapse All

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot

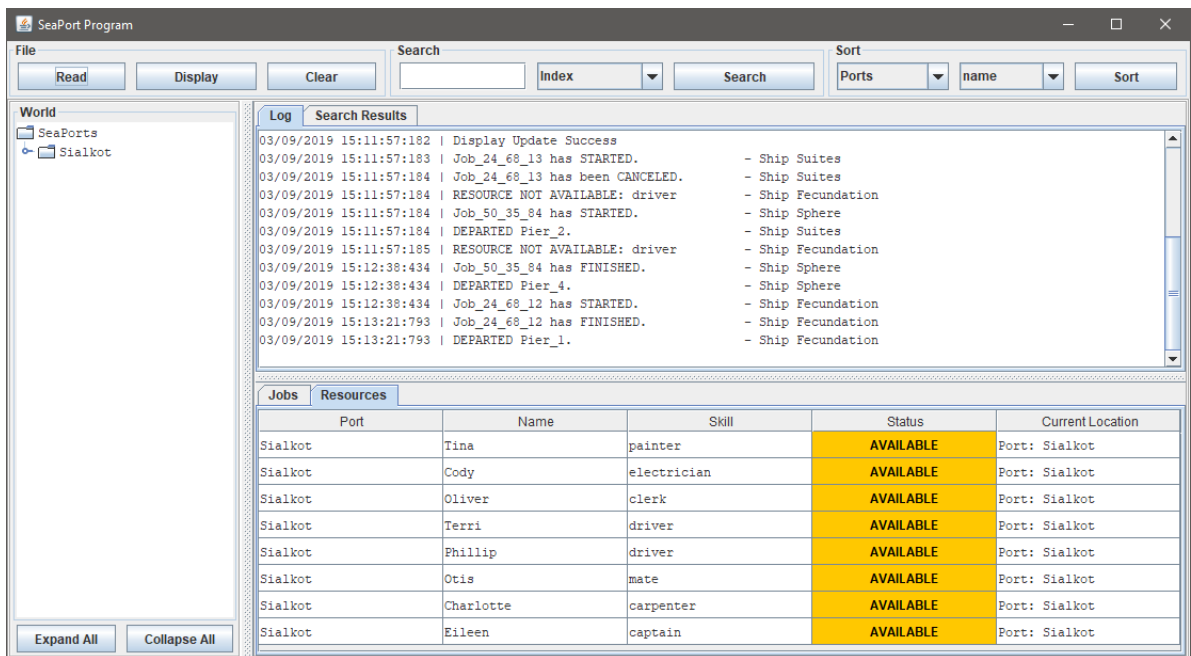
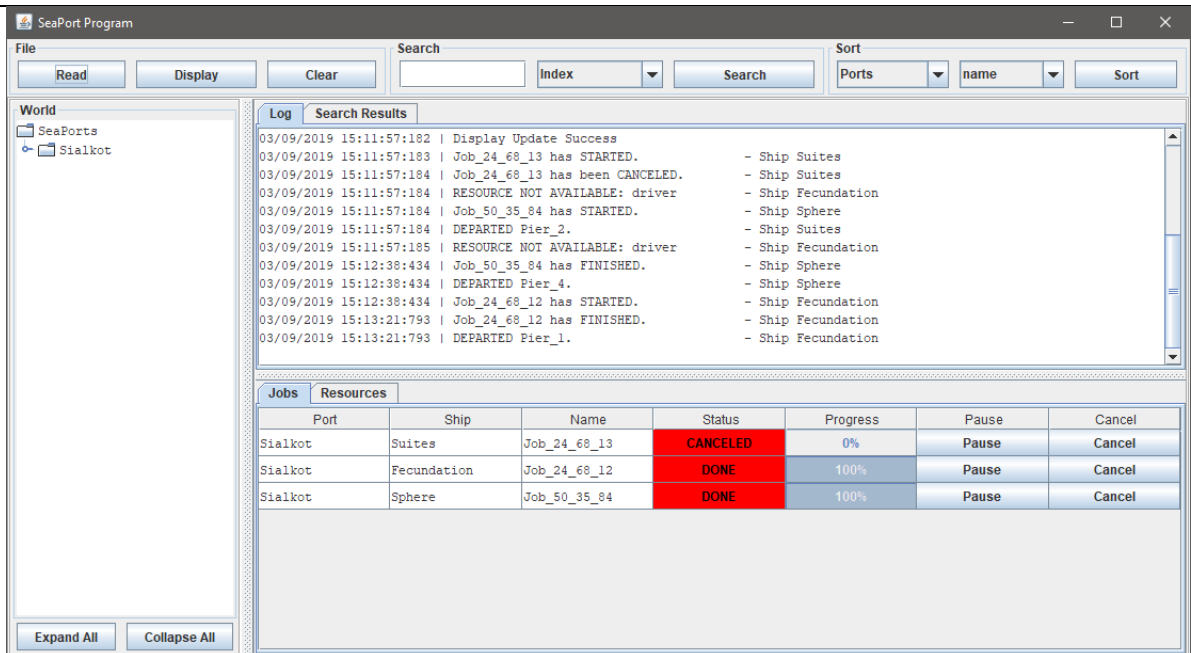
Log Search Results

03/09/2019 15:11:57:180 | DEPARTED Pier_0. - Ship Glory
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Jobs Resources

Port	Name	Skill	Status	Current Location
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Sialkot	Cody	electrician	AVAILABLE	Port: Sialkot
Sialkot	Oliver	clerk	AVAILABLE	Port: Sialkot
Sialkot	Terri	driver	WORKING	Ship: Fecundation
Sialkot	Phillip	driver	WORKING	Ship: Fecundation
Sialkot	Otis	mate	AVAILABLE	Port: Sialkot
Sialkot	Charlotte	carpenter	AVAILABLE	Port: Sialkot
Sialkot	Eileen	captain	AVAILABLE	Port: Sialkot

Expand All Collapse All



Pass/Fail: Pass, looking at the screenshots, we can see that all our expected outputs were met.

Test Case 2:

Test Case: Same conditions of Test Case 1, but on a larger scale.

Selected Input: aSPad.txt

Expected Output:

More than 3/4ths of the Jobs will canceled at the start due to resources not being available in the world, or in the job's respective port (41 of 58 jobs will be canceled). The remaining Jobs will allocate and deallocate resources appropriately.

Actual Output:

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot Kandahar Vainikkala

Log: Search Results 03/09/2019 15:23:41:117 | RESOURCE NOT AVAILABLE: cleaner - Ship Welcoming

Port	Ship	Name	Status	Progress	Pause	Cancel
Sialkot	"ZZZ_Hysteries"	Job_99_51_86	RUNNING	4%	Pause	Cancel
Sialkot	"ZZZ_Hysteries"	Job_73_11_66	WAITING	0%	Pause	Cancel
Sialkot	"ZZZ_Hysteries"	Job_48_65_77	WAITING	0%	Pause	Cancel
Sialkot	Glory	Job_48_89_46	CANCELED	0%	Pause	Cancel
Sialkot	Glory	Job_97_15_76	WAITING	0%	Pause	Cancel
Sialkot	Yeah	Job_97_75_28	CANCELED	0%	Pause	Cancel
Sialkot	Yeah	Job_51_14_13	CANCELED	0%	Pause	Cancel
Sialkot	Blare	Job_36_65_73	CANCELED	0%	Pause	Cancel
Sialkot	Blare	Job_46_56_48	CANCELED	0%	Pause	Cancel
Sialkot	Blare	Job_29_12_70	RUNNING	10%	Pause	Cancel
Sialkot	Vomiter	Job_66_52_86	CANCELED	0%	Pause	Cancel
Sialkot	Vomiter	Job_78_32_64	CANCELED	0%	Pause	Cancel
Sialkot	Ragouts	Job_77_43_75	CANCELED	0%	Pause	Cancel
Sialkot	Fecundation	Job_24_68_12	CANCELED	0%	Pause	Cancel
Sialkot	Sphere	Job_50_35_84	CANCELED	0%	Pause	Cancel
Sialkot	Sphere	Job_63_37_24	CANCELED	0%	Pause	Cancel

Expand All Collapse All

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot Kandahar Vainikkala

Log: Search Results 03/09/2019 15:23:41:117 | RESOURCE NOT AVAILABLE: cleaner - Ship Welcoming

Port	Ship	Name	Status	Progress	Pause	Cancel
Sialkot	Sphere	Job_93_37_24	CANCELED	0%	Pause	Cancel
Sialkot	Sphere	Job_69_42_40	RUNNING	18%	Pause	Cancel
Kandahar	Tieclasp	Job_41_30_21	CANCELED	0%	Pause	Cancel
Kandahar	Tieclasp	Job_23_91_73	CANCELED	0%	Pause	Cancel
Kandahar	Revocability	Job_56_22_75	CANCELED	0%	Pause	Cancel
Kandahar	Revocability	Job_67_51_68	CANCELED	0%	Pause	Cancel
Kandahar	Haviour	Job_55_66_47	CANCELED	0%	Pause	Cancel
Kandahar	Haviour	Job_79_64_23	CANCELED	0%	Pause	Cancel
Kandahar	Haviour	Job_52_46_64	CANCELED	0%	Pause	Cancel
Kandahar	Xanthic	Job_82_27_25	CANCELED	0%	Pause	Cancel
Kandahar	Xanthic	Job_98_48_78	CANCELED	0%	Pause	Cancel
Kandahar	Xanthic	Job_80_20_52	RUNNING	17%	Pause	Cancel
Kandahar	Absciissions	Job_20_50_30	CANCELED	0%	Pause	Cancel
Kandahar	Sunnier	Job_48_45_31	RUNNING	31%	Pause	Cancel
Kandahar	Sunnier	Job_64_50_19	CANCELED	0%	Pause	Cancel

Expand All Collapse All

SeaPort Program

File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot Kandahar Vainikkala

Log: Search Results 03/09/2019 15:23:41:117 | RESOURCE NOT AVAILABLE: cleaner - Ship Welcoming

Port	Ship	Name	Status	Progress	Pause	Cancel
Kandahar	Magical	Job_35_26_63	WAITING	0%	Pause	Cancel
Kandahar	Magical	Job_29_28_74	RUNNING	58%	Pause	Cancel
Kandahar	Employer	Job_56_27_90	CANCELED	0%	Pause	Cancel
Kandahar	Employer	Job_57_62_56	CANCELED	0%	Pause	Cancel
Kandahar	Employer	Job_88_82_13	CANCELED	0%	Pause	Cancel
Kandahar	Revisit	Job_71_95_64	RUNNING	13%	Pause	Cancel
Kandahar	Revisit	Job_68_62_61	CANCELED	0%	Pause	Cancel
Kandahar	Revisit	Job_93_34_80	CANCELED	0%	Pause	Cancel
Vainikkala	Bittern	Job_10_94_27	RUNNING	40%	Pause	Cancel
Vainikkala	Bittern	Job_20_37_21	WAITING	0%	Pause	Cancel
Vainikkala	Floridians	Job_64_63_99	CANCELED	0%	Pause	Cancel
Vainikkala	Subplot	Job_93_67_52	CANCELED	0%	Pause	Cancel
Vainikkala	Subplot	Job_43_31_12	RUNNING	29%	Pause	Cancel
Vainikkala	Insigne	Job_61_35_13	RUNNING	27%	Pause	Cancel
Vainikkala	Hypodermatically	Job_64_40_53	CANCELED	0%	Pause	Cancel
Vainikkala	Hypodermatically	Job_87_38_77	CANCELED	0%	Pause	Cancel

Expand All Collapse All

SeaPort Program

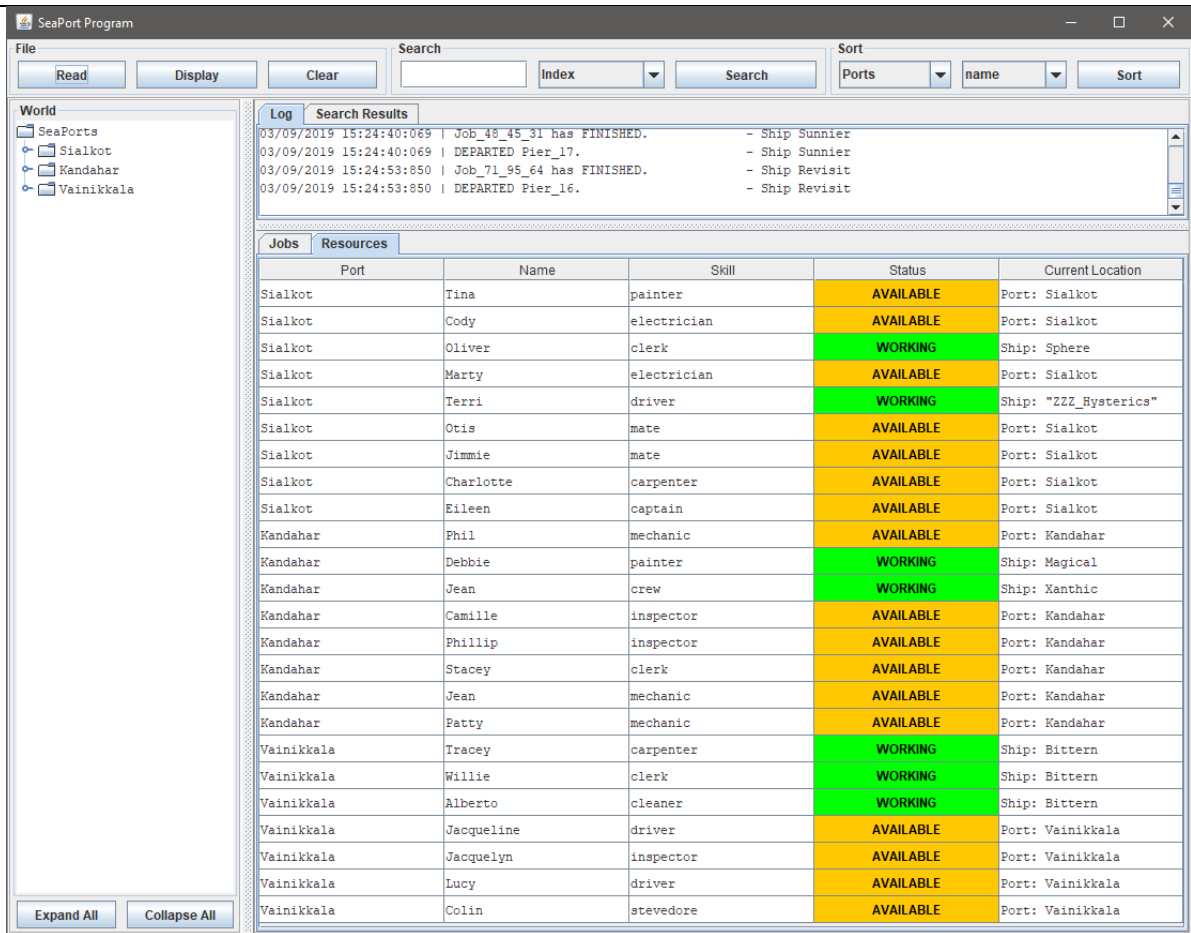
File: Read Display Clear Search: Index Search Sort: Ports name Sort

World: SeaPorts Sialkot Kandahar Vainikkala

Log: Search Results 03/09/2019 15:24:14:102 | RESOURCE NOT AVAILABLE: driver - Ship Glory

Port	Ship	Name	Status	Progress	Pause	Cancel
Vainikkala	Subplot	Job_43_31_12	RUNNING	39%	Pause	Cancel
Vainikkala	Insigne	Job_61_35_13	RUNNING	36%	Pause	Cancel
Vainikkala	Hypodermatically	Job_64_40_53	CANCELED	0%	Pause	Cancel
Vainikkala	Hypodermatically	Job_87_38_77	CANCELED	0%	Pause	Cancel
Vainikkala	Apostrophize	Job_53_22_78	CANCELED	0%	Pause	Cancel
Vainikkala	Apostrophize	Job_12_40_46	CANCELED	0%	Pause	Cancel
Vainikkala	Welcoming	Job_97_35_88	CANCELED	0%	Pause	Cancel
Vainikkala	Welcoming	Job_72_62_40	CANCELED	0%	Pause	Cancel
Vainikkala	Welcoming	Job_49_14_65	CANCELED	0%	Pause	Cancel
Vainikkala	Welcoming	Job_56_59_17	WAITING	0%	Pause	Cancel
Vainikkala	Welcoming	Job_35_34_33	CANCELED	0%	Pause	Cancel
Vainikkala	Autopsied	Job_47_78_83	CANCELED	0%	Pause	Cancel
Vainikkala	Latticing	Job_82_11_72	CANCELED	0%	Pause	Cancel
Vainikkala	Latticing	Job_28_11_75	CANCELED	0%	Pause	Cancel
Vainikkala	Latticing	Job_39_56_39	RUNNING	78%	Pause	Cancel
Vainikkala	Latticing	Job_78_36_10	CANCELED	0%	Pause	Cancel

Expand All Collapse All



Pass/Fail: Pass, looking at the screenshots, we can see that the appropriate jobs were canceled, and the resources are being allocated.

5 Reflection and Lessons Learned

Reflect on your experience completing this project and the lessons you learned:

Overall, I enjoyed this project a lot. It was a fun challenge to work with concurrency on such a big individual project. This project series has been great to challenge me for maintaining and improving an evolving piece of software. One thing that I had trouble with at first was that my log messages were getting interrupted by one another. A message would be appended to the log, but in the middle of the message, *another* message was appended. I realized that not only did the methods in the Job class need to be synchronized, but the other methods it interacted with needed to be as well. I then made the updateLog method a synchronized method, and my problem was solved!

This was a great project series, and a great class! I feel that I have taken a lot from it, and I look forward to using these gained skills in the future.

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