

# **CptS 322 Software Engineering Principles I**

**Spring 2021**

## **Homework 4**

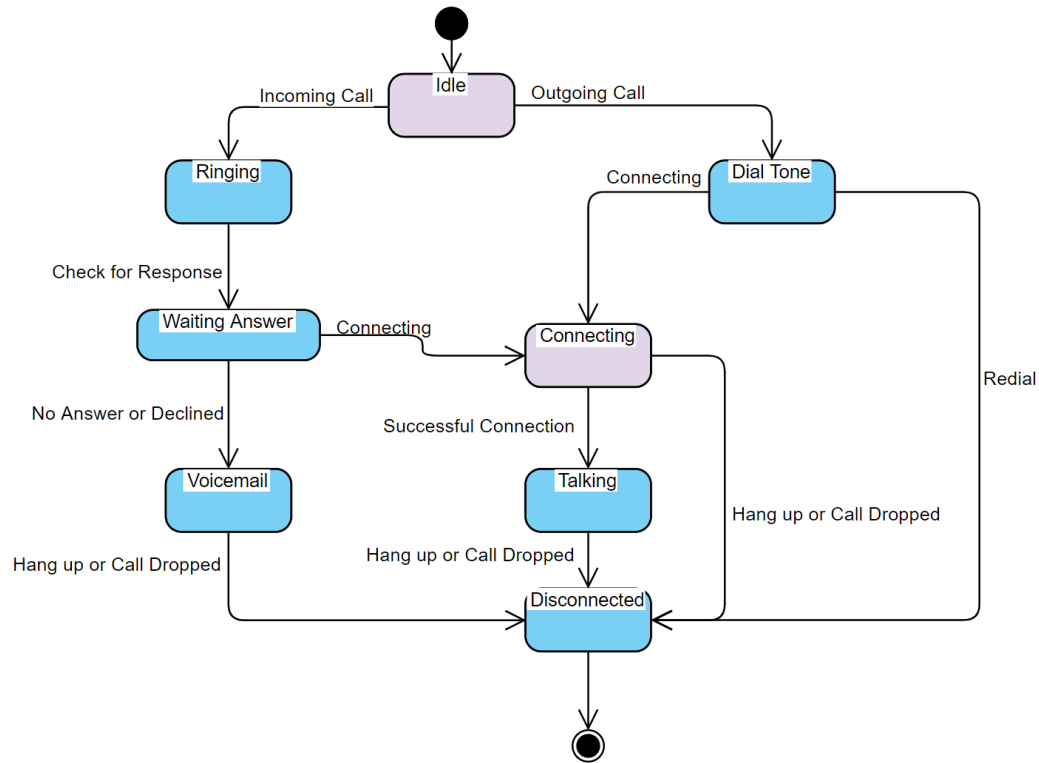
(Due 10<sup>th</sup> April 2021 on [Blackboard](#))

- 1. How does a sequence diagram differ from a statechart diagram? And how are they similar? [10 points]**

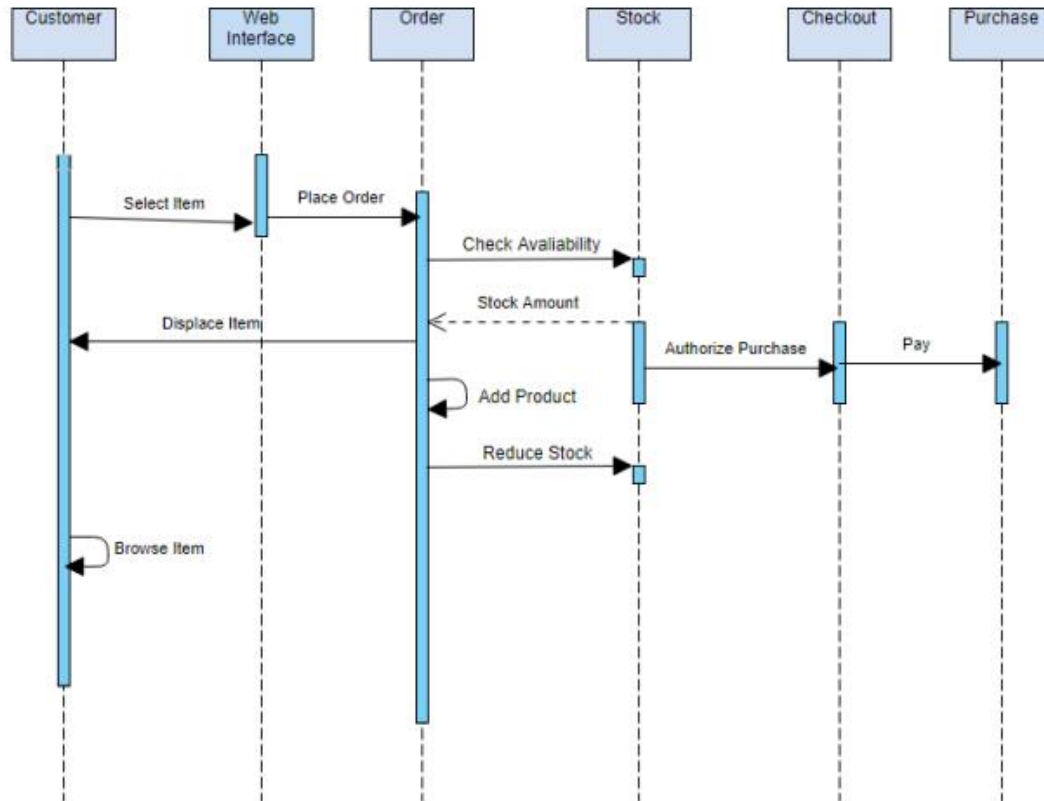
A sequence diagram differs from a statechart diagram in the way that they represent the behavior of the system. Unlike a statechart diagram that represents behavior without noting the classes involved, a sequence diagram represents behavior by describing how classes move from state to state. Additionally, state diagrams represent how an individual class changes its state based on external events whereas a sequence diagram shows the behavior of the software as a function of time.

Both sequence and statechart diagrams are a notation used for behavioral modeling, but each one is a different representation.

- 2. Most smartphones feature an app called “phone” or “dialer”. Draw a UML state diagram to model the behavior of this app (i.e., for the entire system). [15 points]**



**3.** You are now asked to do requirement analysis for an online shopping system (e.g., eBay or Amazon). Draw a UML sequence diagram that represents the system's behavior in *placing an order*. [15 points]



4. Fill out the following table to document the problems you encountered and the web searches you used for *\*all\** course assignments up to this point, and assessment of the usefulness of the search results. [10points]

Table: Assessment of Sources Used to Address Questions/Issues

Fill out a table with the 5 columns as shown below. **List at least 6 sources that you've looked at**—3 that you used and 3 that you didn't use—in course assignments up to this point. In column 1 describe the problem/issue you were trying to resolve. In column 2 provide a URL if it was a website or do a standard citation (APA or IEEE) if it was anything else. In column 3 simply list yes or no indicating whether or not the source helped you resolve the problem or issue. Remember that there should be at least 3 “yes” and 3 “no” in this column. In Columns 4 and 5, assess whether or not each source was relevant and credible, providing a brief but clear rationale for your assessment.

Question/Issue you needed to resolve	Source Considered	Did source contribute to resolution of problem/issue? (Yes/No)	Was source <i>relevant</i> to problem/issue? Why or why not?	Would you consider the source <i>credible</i> ? Why or why not?
Is a waterfall model an agile process?	<a href="#">Agile Vs Waterfall: Know the Difference Between Methodologies (guru99.com)</a>	Yes	Yes, it explains the differences between waterfall and agile very succinctly.	I can't tell who the author is, but the information aligns with everything we learned in class so I would consider it credible.
What are the umbrella activities in software development?	<a href="#">What are the umbrella activities of a software process? - Kovair QnA</a>	Yes	Yes, it listed the umbrella activities at the top of the article.	The information matches what we learned in class, so I believe it is a credible source on this at least.
What is a state chart used for?	<a href="#">UML - Statechart Diagrams - Tutorialspoint</a>	Yes	Yes, it explains the purpose of state charts as well as how to draw them and where it is appropriate to use them.	This is a fairly well-known website and has a credible reputation.
What are the differences between spiral and incremental models?	<a href="#">Difference between spiral and incremental model   CheckyKey</a>	No	It is talking about the right topic, but only very surface level and I needed more in-depth information.	The information was correct, but I would be wary of trusting the site on a topic I don't know much about.
What is the prototyping method used for?	<a href="#">Software prototyping - Wikipedia</a>	No	It has the right topic, but not the information I needed.	It is hard to know if Wikipedia is credible or not, but the parts I read seemed to be accurate.
What is the waterfall method used for?	<a href="#">Waterfall Methodology - A Complete Guide   Workfront</a>	No	This article is about the right topic that I was looking up, but did not answer the question I needed resolved.	This website seems like a credible source as it is an Adobe Company.

The following is an example for your reference.

Question/Issue you needed to resolve	Source Considered	Did source contribute to resolution of problem/issue? (Yes/No)	Was source <i>relevant</i> to problem/issue? Why or why not?	Would you consider the source <i>credible</i> ? Why or why not?
How can I implement cell highlighting?	<a href="http://www.stackoverflow.com/so/meurl.html">www.stackoverflow.com/so/meurl.html</a>	no	No, it talked about actually a slightly different topic.	I believe the source is credible according to the solution description and follow-ups, although it is immediately <u>helpful for my problem</u> .
What is the concept of information hiding?	<a href="http://www.wikipedia.com/sometopic.html">www.wikipedia.com/sometopic.html</a>	yes	Yes, it provided a clear code sample I could adapt for my purposes	I couldn't tell if the author was an expert, but it seemed to work.
How may I draw the UML class diagram?	<a href="http://www.somerandomcodingblog.com">www.somerandomcodingblog.com</a>	no		
What are the right use-case relationships in UML?	<a href="http://www.msdn.microsoft.com/somereferencepage.html">www.msdn.microsoft.com/somereferencepage.html</a>	yes	Yes, it offers the right information about use-case relationships.	I think the source is trustworthy.
Is it possible to derive unit test cases from UML diagrams directly (instead of from source code)?	Jena, A. K., Swain, S. K., & Mohapatra, D. P. (2014, February). A novel approach for test case generation from UML activity diagram. In <i>Issues and Challenges in Intelligent Computing Techniques (ICICT)</i> , 2014 International Conference on (pp. 621-629). IEEE.	yes	Yes, the paper contains a relevant discussion on generating test cases from UML activity diagrams.	I think it is credible, because the paper has been cited twenty times by later papers.
What are the differences between a statechart diagram and a sequence diagram?	<a href="https://books.google.com/books?id=t0a4E94wrp8C&amp;printsec=frontcover&amp;dq=haipeng+cai&amp;hl=en&amp;sa=X&amp;ved=0ahUKEwjG14WIn6PVAhUqxVQKHQ2oD58Q6AEIQzAG#v=onepage&amp;q=haipeng%20cai&amp;f=false">https://books.google.com/books?id=t0a4E94wrp8C&amp;printsec=frontcover&amp;dq=haipeng+cai&amp;hl=en&amp;sa=X&amp;ved=0ahUKEwjG14WIn6PVAhUqxVQKHQ2oD58Q6AEIQzAG#v=onepage&amp;q=haipeng%20cai&amp;f=false</a>	No		