

CptS 322 Software Engineering Principles I

Spring 2023

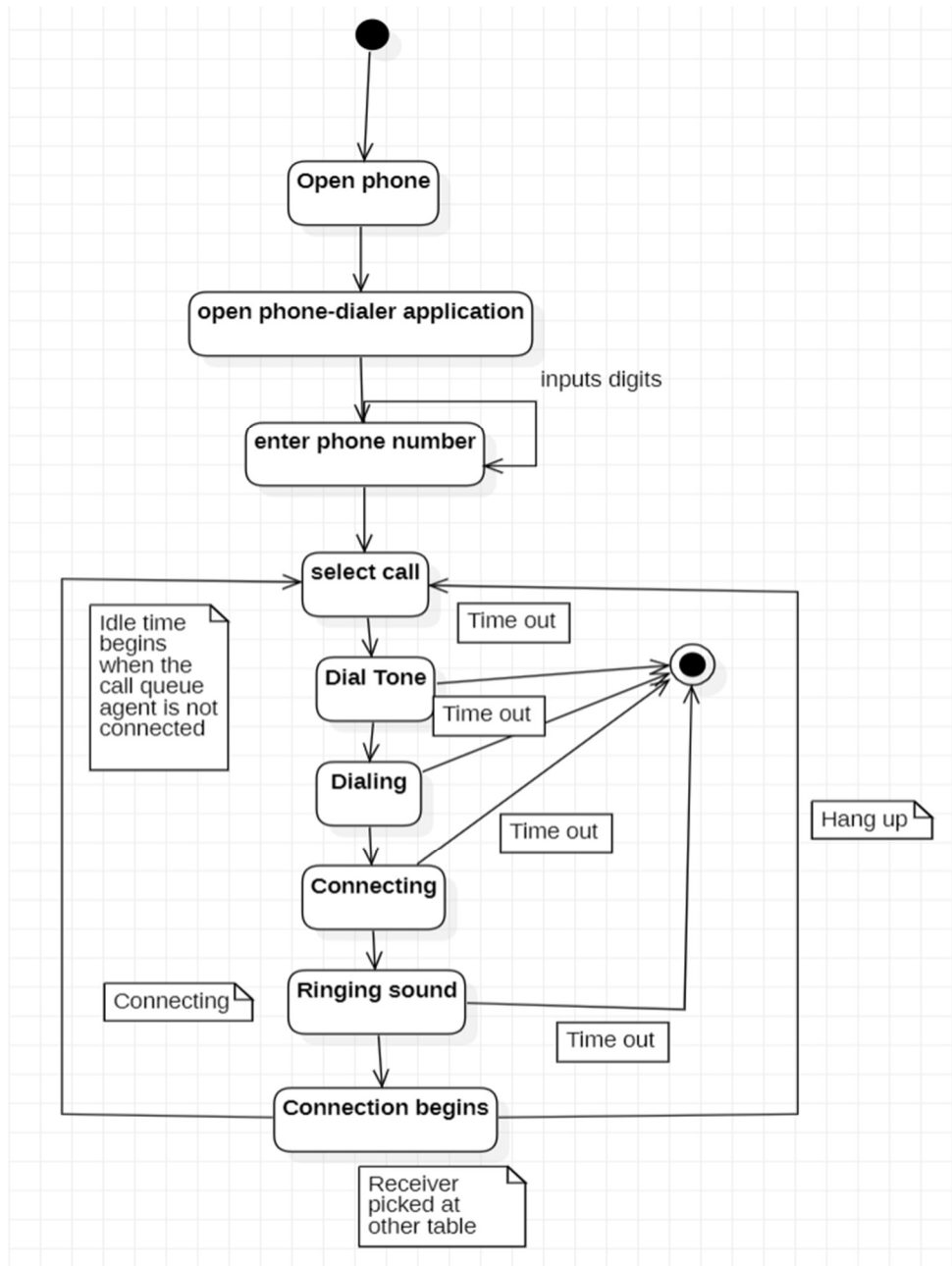
Homework 4

(Due 6th April 2023 on Canvas)

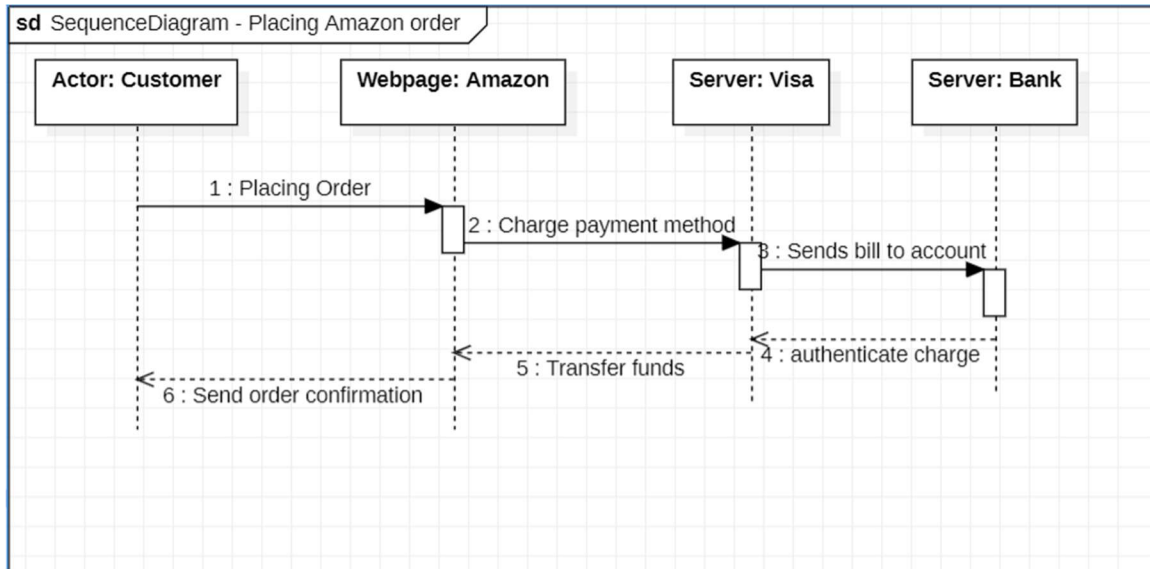
1. How does a sequence diagram differ from a statechart diagram? And how are they similar? [10 points]

- A sequence diagram and state chart are similar in a few different ways, both sequence and state chart diagram are used to model aspects of a system. Both types of diagrams use UML notation to represent the elements and relationships in the system being modeled. Both sequence diagrams contain states, events, and transitions. The differences between a state chart and sequence diagram is that a sequence diagram typically shows the execution of a particular use case for the application and the objects that are involved in carrying out that use case. It could either show a single path, or all of the various paths, through the use case, starting with an actor initiating some kind of action. State diagrams show the various states that are valid for an object. That could be a particular class or system as a whole. This type of diagram shows what actions are valid for a given object, depending on what state it is currently in.

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.

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?
What is a waterfall model?	Techtarget.com What is the Waterfall Model? - Definition and Guide (techtarget.com)	yes	Yes, it was relevant because when I wanted to finish homework 2 I had trouble figuring out different modeling	It seems very relevant and the source seems to be authentic all the information used was helpful and provided much needed insight.
What is a swimlane diagram and how does it compare to other diagrams ?	Office Timeline, Introduction to Swimlane Diagrams - Examples, Tools & Tutorials (officetimeline.com)	Yes and no	Yes and no, It definitely helped understand how a swimlane diagram works and how to make one but I didn't understand how it differed from other diagrams in the context of project development	Unsure, but I believe that the swimlanediagram and the extra context was correct. Also, the source provided a lot of good information.

How does a use case diagram compare to activity diagram?	Lucidchart.com UML activity diagram UML Activity Diagram Tutorial Lucidchart	yes	Yes, this source helped me understand what an activity diagram is and how it relates to an use-case diagram	Yes, this source included videos and also included credited sources that back up the information included.
What are actors and what are types of actors in Use Case Model?	Visualparadigm.com Types of Actor in a Use Case Model (visual-paradigm.com)	Yes and no	It definitely helped me walk through a understanding of actors in the use case modeling context	Yes, I used this particular source a few times and found it useful when conceptually understanding actors and how they function in the model.
How does one create a use case diagram and what does one look like?	Visualparadigmoline.com Use Case Diagram Tutorial (visual-paradigm.com)	yes	Yes, it walked me through creating a use case diagram and how to set one up	Yes, given all the information provided, everything seems to be legitimate and helpful information and the source is a reputable tech source
What does a state diagram look like and how does one create one?	Programsformca.com State Diagram for Telephone UML Programs and Notes for MCA (programsformca.com)	yes	Yes, I learned from this source, basically I was able to see how a state diagram looked like and it helped understand a real world example of what a state diagram looks like	Yes, this source is reliable because I compared the results to another diagram and the two matched up and made sense
What are the differences between a statechart diagram and a sequence diagram?	Softwareengineering stack exchange, link: uml - Difference between statechart and sequence diagram - Software Engineering Stack	yes	Yes, it helped understand more context and it helped me conceptual how the two concepts are similar and different	Yes, typically highly upvoted replies are usually correct and really helpful

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?	www.stackoverflow.com/so/meurl.html	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 helpful for my problem.
What is the concept of information hiding?	www.wikipedia.com/someopic.html	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?	www.somerandomcodingblog.com	no		
What are the right use-case relationships in UML?	www.msdn.microsoft.com/somereferencepage.html	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?	https://books.google.com/books?id=t0a4E94wrp8C&printsec=frontcover&dq=haipeng+cai&hl=en&sa=X&ved=0ahUKEwjG14WIn6PVAhUqxVQKHQ2oD58Q6AEIQzAG#v=onepage&q=haipeng%20cai&f=false	No		
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Notes:

- Submit a single PDF for these questions to Canvas.
- Use standard UML notations when drawing the diagrams.
- For Question 4, you should have encountered enough problems and done enough searches, since by this point you have done quite some assignments for this course. However, if you insist that you indeed did not have enough problems and/or searches, you may just fill in as many as you have actually done, along with your explanations.