SE 300 Spring 2018 Test 1 Name: \_\_\_\_\_\_\_\_\_\_David Jefts\_\_\_\_\_\_\_\_\_\_\_

**DUE BY MIDNIGHT MAY 1, 2018, via CANVAS**

* Edit this document and turn in via Canvas before midnight, Tuesday, May 1. Do not turn in hand written work. Do not turn in work without this document.
* This is an individual activity. Do not work with others.
* This test is worth 100 points toward your final course grade. There are 500 total points in the course.
* Referenced PowerPoint slides can be found on Canvas announcements.
* How long should your answers be? (I get this question a lot.) Long enough to answer the question, of course! I’m specifically looking for two things in each answer: show me that you know the definition of terms being used, and show me that you can say something intelligent about it. That usually takes two sentences per term. Writing a lot beyond that tends to not be helpful. In my experience, people writing really long answers are usually trying to throw a bunch of words out hoping something will stick. Keep it to the point.

Q1. (20 pts) (Reference Lecture 2, Ethics, slides 6 and 7) Read the scenario at the link below. In our ethics discussion we identified several communities that may be impacted by an ethical issue. Select three of these communities and describe how the scenario affects them.

Link: <https://www.scu.edu/ethics/focus-areas/more/engineering-ethics/engineering-ethics-cases/may-the-truth-be-with-you/>

A1. This issue affects the management, product, and judgement communities. Management should be expected to do the right thing even if the company might lose some profits, especially since eventually the good face would help promote the company as “the good guys”. The product should have been made correctly from the start and really shouldn’t have been able to be shipped if it had a 50% defective rate. Connecting the above to communities, the management for the company should not have allowed defective products to be sold and should have held the integrity of the product over company profits. Catherine should use her better judgement and tell the test site why the shipped units failed because she (probably) has good morals and an independent judgement.

Q2. (15 pts) Assume your product was made available to the public as a product. What local and global impacts might it have? If you don’t think your product has any direct impacts, consider if it was expanded. You may choose to think of your product as an example of a larger class of products and answer the question for the larger class.

A2. I do not know if our product would have any immediate local *or* global impacts. It is mostly a research project intended to help advance Artificial Intelligence in general and learn how to create a system that can control itself given rules. To have the most impact, it should be combined with a project like the one I worked next to during the semester. That project sought to create a program that could be placed into a simulation, determine the best fit entity for a situation, and then create another “generation” of that entity. My project could be turned into a full AI research project by combining these two separate projects to create a simulation that will evolve over time based on a basic set of rules (what limits are there for an agent’s life, and how do agents most basically interact with each other, etc.) and possibly model Darwin’s evolution if worked on and expanded enough.

Q3. (20 pts) (Reference Lecture 5: Teamwork, slide #3) There are four properties that must be satisfied for a group of people to properly be considered a team. Describe how your team met (or did not meet) each of these four properties.

A3. “A team consists of”

* “at least two people”— my team was a group of 3
* “who are working towards a common goal/objective/mission”—my whole group was trying to complete the project and pass the class while learning how to program and manage a team better
* “where each person has been assigned specific roles or functions to perform” – all 3 of us had a different role in the group and we rotating throughout the semester. I started off in control of Testing and Design, while Casey was in charge of the project (Product Owner) and Christian kept the team on track (Scrum Master).
* “where completion of the mission requires some form of dependency among the group members.” – our project required all 3 of us to be active participants. In terms of the actual code writing and the simulation, Christian was in charge of creating the GUI for the simulation which relied on my implementation of the individual agent objects and the creation of the simulation format and setup. Casey was in charge of the input and output functions of the program that allow a user to create their own agent and then read data gathered by the simulation on its performance. My portion required Casey to do her part because the individual statistics and data for each different type of agent is stored in an external file that Casey created (and later set up to be read from).

Q4. (20 pts) Summarize the agile scrum process and how your team implemented the process. If your team process differed from a standard practice listed in the The Scrum Guidetm describe the differences and discuss why the team adopted them.

A4. Scrum is a type of agile process used to describe how an engineering design and implementation team is, well, implemented. A team using the Scrum process can consist of any number of people. It is based upon a series of iterations over periods of [usually] 24 hours and 2 weeks. Before anything can happen though the team has to be set up. Each member should know their roles, and what is going to be required of them. Additionally, the Scrum Master (essentially the team lead) and the Product Owner (the person in charge of making sure the product is satisfactory) have to meet up with the customer and come up with a list of requirements and “user stories” that describe what is wanted out of the project and what needs to be done to make that happen. These can be changed or modified at any point throughout the project but an initial version has to be created so that the team may start developing, this creates the Product Backlog.

Each 2-week period that a Scrum team iterates through is called a “Sprint”. This is what sets the Scrum model apart from other modes of development. Each Sprint, the team decides what user stories from the Product Backlog they want to have completed by the end of the 2-week period. These user stories are added to the Sprint Backlog which is the list of user stories currently being worked on. At the end of each Sprint the team has a meeting called the Sprint Review and Sprint Retrospective meetings. At the review meeting the team reviews and demonstrate the product at its current state to determine whether it passes the requirements for the chosen user stories, and to show what new features are available. The Retrospective is for the Scrum Master and Product Owner meet with the team and decide how well the process is currently working and what changes (if any) need to be made.

Each 24-hour period, the Scrum team is to meet up, discuss what they have accomplished in the last 24 hours and then make sure everyone else is on track. This is called the “Daily Scrum Meeting” and additionally helps each team member be aware of what work they are supposed to accomplish that day. Our team did not meet every 24 hours, but instead chose to meet 2 times a week, with additional meetings whenever needed. We were able to be successful with this change because of our ability to communicate with each other over the internet through GroupMe and share code using GitHub.

Q5. (15 pts) List two tools that your group used. Describe what the tool was used for. Describe how the tool affected the software development process. Describe how the tool affected team dynamics.

A5. The biggest tools our group used were Google Drive for document sharing and control and GitHub for code sharing and control. Google Drive helped us keep all of our documents (like SRS, Testing, Design, Backlog, etc.) organized and we separated each set of documents into folders by the roles in charge of them, for example the “Scrum Manager” folder holds the Retrospective Meetings, Scrum Minutes, and Sprint Planning documents. This helped all of us really keep track of who was in charge of what documents and allowed easy access to all of us allowing anyone to see any of our group documents at any time. This reduced the physical paper load we had and allowed for us to be able to discuss online any changes being made.

GitHub is an online source code control tool and is very useful for keeping track of who has added what code and when. It also allows for easy tracking of issues that could arise from combining two different sets of code and allows the user to roll back to a previous “commit” or version if something is wrong in the current one. This allowed us to control our code and make sure everyone was doing their part of the project as it is very easy to see how long it has been since someone changed the existing project. This was another major reason we did not have to meet every 24 hours- we could add or remove code remotely and discuss online what changes were made, and even see what changes someone else made very easily.

Q6. (10 pts) Briefly describe the purpose and relationship between the following documents: Needs Statement, Requirements Document, Design Document, and Test Plan.

A6. The Needs Statement, also called The Product Vision, outlines the goal of the product/project, where it is supposed to go, what it is supposed to accomplish, and how can get there. This should outline why the product should be developed. It is a waste of time to create a product that is useless or already existing. The Needs Statement basically answers the questions: “What does this actually do for me?” and “Why should I buy this?”

The Requirements Document (SRS) is an outline of everything the project does and what it needs. It explains the purpose of the project, and relationships it might have with external systems and projects, and what external systems, projects, or tools are required to be able to use the product. This is basically the cover page for the product and is the part that would be shown to a user or customer who wants to use the product.

The Design Document is the main description of the project. Similar to the SRS it describes the functionalities of the product, but the majority of it is dedicated to showing how the product works. In a software product, this means displaying a UML diagram that shows how each part of the project is related. In a hardware product, there would need to be a diagram showing the hardware that was developed, how it works, and how it is connected to other pieces of hardware (if necessary).

The Test Plan outlines how the product is going to be checked against the specifications that the customer wants. It should show how the product is going to be used in a testing scenario, using many different environments and/or conditions, to make sure that the product is not missing an important part or feature and is actually usable.