Table 1: Revision History

Date	**Developer(s)**	**Change**
Jan 22, 2020	Kanakabha, Lucia, Raymond	creating problem statement
Jan 24, 2020	Lucia	adding notes for Workflow and PoC
Jan 28, 2020	Kanakabha, Lucia, Raymond	finalizing workflow, PoC and coding style
Jan 29, 2020	Kanakabha, Lucia, Raymond	finalizing PoC and adding GANTT Chart

SE 3XA3: Development Plan
Scrabble

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This is the Development Plan for the Scrabble project created by Team Trifecta.

1 Team Meeting Plan

Team meetings will occur weekly during SFWRENG 3XA3 Lab Section 2 on Tuesdays. These meetings will be twenty to forty-five minutes in length depending on the needs of that week. Extra meetings will be scheduled as needed throughout the term. The meetings will be chaired by Lucia Cristiano. The chair will create the meeting agenda each week and ensure that all team members have input during the meeting. Each meeting Raymond Tu will act as scribe and take the necessary meeting minutes. The scribe will create a meeting minute document that will be filled in during each meeting.

The meetings will follow the format specified by the agenda. Firstly, the group will perform a check-in to see how the tasks that were assigned in the last week progressed or if they have been completed. The team will then reflect on past milestones and internal goals to talk about how they went and what lessons can be learned. Then the team will focus on immediate goals, coming up in the next one to two weeks. Finally, the group will look ahead to the future and brainstorm and assign individuals to work on future milestones and goals.

2 Team Communication Plan

The team will be using Git Issues to track and communicate errors in code, request edits on documentation and highlight any portions of code that need fixing. Essentially Git Issues will be used for anything pertaining specifically to code and documentation of the project.

As a second form of communication Facebook Messenger will be used for scheduling meetings, reminders, and general talking.

3 Team Member Roles

The roles of the team will be as follows. The team leader will be Kanakabha Choudhri. Team meetings will be chaired by Lucia Cristiano and during the meeting minutes will be taken by Raymond Tu, the scribe.

4 Git Workflow Plan

The workflow plan for project is loosely based on the article referenced in the lecture slides [1].

For the Scrabble project several branches will be used such as a master branch, development branch, and release branch. A master branch will be used for the main releases of the project such as Revision 0 and Revision 1. Only code items that are ready for release will be merged or pushed to master.

A development branch will be used to allow developers to work on code that is actively being prepared for future release. This branch merges back to master once ready for release.

A release branch will be branched off of the development branch once the project is close to a release. In this branch, last minute bug fixes and edits will be completed by developers. Once the project is ready for release, this branch is merged with master. The branch is also merged with development branch to ensure that all additions to the release are available for the next iteration.

5 Proof of Concept Demonstration Plan

5.1 Most significant risks

1. **Difficulties in Implementation**
   Since the Scrabble project is a game, team trifecta decided to use decided to use the Model-View-Controller(MVC) design architecture as this architecture is commonly used for games. Using MVC will ensure that the separate aspects of the game work cohesively with each other. The group members have limited experience using the MVC architecture, thus it may be a challenge to implement. Besides implementing this architecture, the project has a GUI component that will be created in Tkinter. No member of the group has used this software before, so there will be a learning curve associated with using this library.

2. **Difficulties in Testing**
   Testing will be difficult as we have to test it based on user behaviour. This requires a lot of play through and exploratory testing, to reveal issues and bugs. Exploratory testing can be a lengthy process and require and indidividual outside the project to test the software.

3. **Difficulties in Installing Libraries**
   The only library which may possibly give issues is Tkinter. Although Tkinter comes packaged with versions of Python 3, some users experience issues with having windows created using this library appear on the screen.

4. **Difficulties in Portability**
   Portability should not be a concern, any computer with Python 3 installed should be able to run the project. There but there is potential for issues with Tkinter, as mentioned in the previous section.

5.2 Demonstration on How Risks Will be Overcome

1. **Implementation**
   To ensure properly implementation of the MVC architecture, the team members will conduct research, such as looking at examples and reading articles.
   To ensure that implementation goes smoothly the team members will go through tutorials found online to familiarize themselves with the Tkinter library. As the team members practice and understand how to use Tkinter, implementation will be easier.

2. **Testing**
   To ensure that there will be time for exploratory testing, the group members will test incrementally using unit tests as features are added to the project. Once the individual modules are tested, the team can focus efforts on exploratory testing to provide a good user experience. The group will also ask colleagues to play the game as a form of exploratory testing.

3. **Installing Libraries**
   An additional software known as Windows Xming can be downloaded and a line added to the .bashrc file of the computer to remedy the issue of windows not being visible.

4. **Portability** To fix this issue, the steps mentioned in the Installing Libraries section can be followed.

6 Technology

The project will be written in Python version 3 as the primary programming language. The IDE for coding will be based on the preference of the individual developer. Some team members prefer to use Notepad++ and others use VS-Code. For unit testing the project the team will use the PyTest as the testing framework. For the project documentation Doxygen comments will be used and automatically generated as a way of documenting the code for the project. Team Trifecta chose to use Python, PyTest and Doxygen as the main technology in our program as all the team members had experience with these platforms through coursework in the past years of university.

7 Coding Style

The coding style that will be used by team Trifecta for the Scrabble project is based off of the Pep 8 style guide for Python [2]. For indentation four spaces will be used rather than tabs. Each line can only have 79 characters maximum. All source files will be encoded in UTF-8 standard. Import statements for libraries will be on separate lines. For consistency, we will be using only single quotes for strings. White space will be avoided for consistency and readability. Trailing white space will also be avoided. Binary operators will be surrounded by a single space on each side for readability. Variable and class naming will follow Pep 8 conventions, with CamelCase for class names and variable names. Global variables will be named with the convention of prefixing with underscores. Constants will be named using all upper case letters.

In order to ensure consistency and that these rules are followed a linter called flake8 will be used to ensure that the code for the project is consistent and follows the rules of the Pep 8 style guide.

8 Project Schedule

[Click Here for Link to Gantt Chart]

9 Project Review

References

[1] V. Driessen, "A successful git branching model," Jan 2010. Accessed on 2020-01-28.

[2] G. Van Rossum, "Pep 8 – style guide for python code," Aug 2013. Accessed on 2020-01-28.