Project Overview

Your course grades come almost entirely from the semester-long team project. The project will be written in Node.js and will use the Microsoft Bot Framework. Teams of 3-5 persons will be created by the instructor. Each team will be assigned a product owner by the instructor. Product owners may be a member of the instructional team, a person from industry, or a senior student.

Project Domains

Every group will be creating a conversation-bot that assists a student with some aspect of being a computer science student. In all cases the bots must go beyond the ability to answer simple keyword-based queries. Your group will select one of the following domains:

- A bot that identifies needs and then helps people connect to SOCS and UofG remote systems (i.e. linux.socs, wiki.socs, database servers, vpn, etc.)
- A bot that answers questions about C programming (i.e. explains error messages, helps with syntax questions, suggests programming constructs after asking about the problem being solved, etc.)
- A bot that answers questions about Java programming (i.e. explains error messages, helps with syntax questions, suggests programming constructs after asking about the problem being solved, etc.)
- A bot that helps the user decide who to contact given a conversation about the problem they are having and then helps them find the contact information for that person.
- A bot that provides program information for people in the BCOMP program (prerequisites, semesters courses are offered, content outline, required courses, area of application, etc.)
- A bot that uses an external wiki (like wiki.socs.uoguelph.ca) to assemble its own knowledge base and then answers questions from users about that knowledge.

Your product owner will flesh out more expectations for the capabilities of the bot within the domain you have selected.

User Interface Expectations

Your bot will be hosted on a linux server, provided by SOCS, that your team controls. You will provide a web front end to converse with your bot in addition to demonstrating the bot interacting with users in a slack or teams channel. You may add other user-interaction mechanisms if you wish, but the web front end and the slack/teams service are required.

Development Process: Scrum

We will follow the scrum software process for the entire project. The project will be divided into three sprints. For each sprint you will select user stories from the product backlog and implement and test those user stories. Your goal is to define user stories, in collaboration with your product owner, that can be completed in a single 3-week sprint. Your team will probably implement between 4 and 8 user stories per sprint. You likely won't complete all of the user stories in the product backlog by the end of the semester.

Each sprint must have a different scrum master. The product owner does not do any development but they own the product backlog.

Sprint meeting deadlines

Each of these meetings must include your product owner. Evidence of these meetings taking place on time must be included in your milestone summary.

- September 22: Last day to complete backlog generation
- September 29: Last day to complete Sprint 1 planning meeting
- October 15: Last day to complete Sprint 1 review meeting
- October 20: Last day to complete Sprint 2 planning meeting
- November 5: Last day to complete Sprint 2 review meeting
- November 10: Last day to complete Sprint 3 planning meeting
- November 26: Last day to complete Sprint 3 review meeting

Required Development Tools

- Microsoft Bot Framework must be used for the bot
- Node.js must be the main development language
- Project must be hosted in the provided repository on git.socs.uoguelph.ca
- Bot must be hosted on the provided linux server
- The project team must use the gitlab wiki, boards, and issue system to document and manage sprints

Grading Process

Your project is submitted as 3 milestones and a final presentation.

- Milestone 1 (25%): 8 a.m. October 16
- Milestone 2 (25%): 8 a.m. November 6
- Milestone 3 (25%): 8 a.m. November 27
- Final Presentation (10%): no later than 5 p.m. December 11 (this date is in the exam period)

Milestones

Milestones are simply a summary of the most recent sprint. Your milestone submission should be a single pdf file that provides evidence in the form of screenshots, links, and locations of the markable elements for that milestone. It is highly recommended that you use the list of markable elements as headings in your summary document. The submission may include extra explanation if desired. The list of markable elements for each milestone is listed later in this document.

Each milestone has markable elements that refer to some of eight required course topics and one open markable element that your team may select from the course topics available for student choice. You may not select the same student choice element for more than one milestone.

Where markable elements refer to course concepts, your team is responsible for documenting in your project wiki how you have incorporated your knowledge of that content into your project. This documentation should include file names and line numbers where appropriate as well as explanations. If there is a concept that is inappropriate for incorporation into your project, then your team should explain why that is so and what would need to change for the concept to apply to your project.

If a group neglects to submit a milestone summary by the required due date, the instructional team will attempt to independently locate the markable elements in your git repository in order to grade the team's work. Some elements may get missed. **Your team is only eligible to request a milestone regrade if a summary document is submitted by at least one team member before the submission deadline.**

Milestone Grading

Milestones are graded by deduction to produce a mark out of 100. The list of markable elements and the maximum deduction for missing that element is shown with each milestone description. There are more than 100 possible deductions. Your team milestone grade will not be greater than 100 nor less than 0.

Individual team members are required to assess the activities of each member of the team for each milestone. The assessment is done via the course website at the same time as the summary document is submitted. Any individual who does not submit an assessment of the team members will be penalized 10% of the milestone grade.

Milestone One (Grading Starts October 16)

Your team should select 3 of your Sprint 1 user stories to be evaluated for Milestone One. Selected user stories should not include housekeeping tasks like authentication or setting preferences.

Markable Element	**Max Deduction**
User Story #1 (no epics, proper format, acceptance criteria)	5
User Story #1 deliverable	5

User Story #1 repeatable testing	5
User Story #1 refactored	5
User Story #2 (no epics, proper format, acceptance criteria)	5
User Story #2 deliverable	5
User Story #2 repeatable testing	5
User Story #2 refactored	5
User Story #3 (no epics, proper format, acceptance criteria)	5
User Story #3 deliverable	5
User Story #3 repeatable testing	5
User Story #3 refactored	5
Agile Dev: Roles: Clear description of the roles for each team member for this sprint	20
Agile Dev: Scrum Meetings: Backlog Generation Meeting	10
Agile Dev: Scrum Meetings: Sprint Planning Meeting	10
Agile Dev: Scrum Meetings: Sprint Review Meeting	10
Agile Dev: Scrum Meetings: Daily Standups	10
Agile Dev: Version Control: Merge Review Process	10
Agile Dev: Clean Code: Published Coding Standards	10
Agile Dev: Clean Code: Linter	10
Agile Dev: Scrum: Sprint Board	10
Agile Dev: Scrum: Issue Tracking	10
Agile Dev: Scrum: Project Documentation in wiki	10
OO Theory: Template Based OO	10
OO Theory: Designing for Reusability	10
Code Smells: Variable Reassignment	10
Code Smells: Long Parameter List	10
Code Smells: Long Methods	10
Code Smells: Chained Methods	10
Selected topic from choice section of course	10
Grammar, spelling, overall organization of materials	20

Milestone Two (Grading Starts November 6)

Your team should select 3 of your Sprint 2 user stories to be evaluated for Milestone Two. Selected user stories should not include housekeeping tasks like authentication or setting preferences. All expectations for M1 remain in place. Marks will be deducted if your submission does not meet the expectations for M1.

Markable Element	**Max Deduction**
Markable elements from M1	30
User Story #1 (no epics, proper format, acceptance criteria)	5
User Story #1 deliverable	5
User Story #1 repeatable testing	5
User Story #1 refactored	5
User Story #2 (no epics, proper format, acceptance criteria)	5
User Story #2 deliverable	5
User Story #2 repeatable testing	5
User Story #2 refactored	5
User Story #3 (no epics, proper format, acceptance criteria)	5
User Story #3 deliverable	5
User Story #3 repeatable testing	5
User Story #3 refactored	5
Scrum meeting documentation (planning, review, standups)	20
Testing: repeatable unit tests for all user stories	20
Testing: integration test plan documented with justification for choices	10

DevOps: Linter integrated into CI/CD	10
DevOps: Unit Tests integrated into CI/CD	10
DevOps: merge success depends on CI/CD Success	10
DevOps: single-issue branch/merge strategy used project wide	10
SOLID: Single Responsibility	10
SOLID: Open-Closed	10
SOLID: Liskov Substitution	10
SOLID: Interface Segregation	10
SOLID: Dependency Inversion	10
Selected topic from choice section of course	10
Grammar, spelling, overall organization of materials	20

Milestone Three (Grading Starts November 27)

Your team should select 3 of your Sprint 3 user stories to be evaluated for Milestone Three. Selected user stories should not include housekeeping tasks like authentication or setting preferences. All expectations for M2 remain in place. Marks will be deducted if your submission does not meet the expectations for M2.

Markable Element	**Max Deduction**
Markable elements from M2	30
User Story #1 (no epics, proper format, acceptance criteria)	5
User Story #1 deliverable	5
User Story #1 repeatable testing	5
User Story #1 refactored	5
User Story #2 (no epics, proper format, acceptance criteria)	5
User Story #2 deliverable	5
User Story #2 repeatable testing	5
User Story #2 refactored	5
User Story #3 (no epics, proper format, acceptance criteria)	5
User Story #3 deliverable	5
User Story #3 repeatable testing	5
User Story #3 refactored	5
Scrum meeting documentation (planning, review, standups)	15
Refactoring: Identify code improvements between M1 and M3	15
Refactoring: Identify rational for refactoring for 2 pieces of refactored code	5
Architectures: Explain the architecture used for this project	10
Architectures: Identify one other possible architecture for this type of project and explain roughly how it would be realized.	5
Design Patterns: Identify and document the existence of a design pattern in your codebase	5
Design Patterns: Identify and document the existence of a second design pattern in your codebase	5
Design Patterns: Identify and document the potential for refactoring your code base to implement a third design pattern. Do not do this refactoring.	5
Selected topic from choice section of course	10
Grammar, spelling, overall organization of materials	10

Final Presentation (no later than Dec 11)

Your final presentation may be a virtual presentation via Zoom done in real time (and recorded for your peers to see if they can't attend) or it may be a pre-recorded video presentation. You may be asked to answer questions during the live presentation or answer written questions if you submit a pre-recorded presentation.

Presentations will be marked out of 30 points using the same deduction-based grading mechanism as sprints.

Markable Element	**Max Deduction**
Statement of purpose of the bot	5
Demonstration of the bot in use via Slack	15
Demonstration of the web front end of the bot	15
Summary of user stories completed	5
Future work (highlights from the remaining product backlog)	5
Most valuable skills developed (team members or consensus)	5
Knowledge gained/learned (team members or consensus)	5
Team member introduction and major contributions	10
Product owner introduction	5
Grammar, diction, presentation materials	10