

Software Project

Team Name: TeamBot

Project Name: Cave Examination Bot

Team Number: 9

Student Names and IDs:

Adrian Portal Calcines - n01489363

Alfred Dowuona - N01490404

Ali Mohebi - N01477361

Hassan Noorani - N01485518

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Team Contract:

CENG-322 TEAM PROJECT

Team Name:

__TeamBot_____

Team Number:

__9_____

Project Name:

__Cave_Examination_Bot_____

Please negotiate, sign, scan and include as the first section in your Deliverable 1.

Please note that if cheating is discovered in a group assignment each member will be charged with a cheating offense regardless of their involvement in the offense. Each member will receive the appropriate sanction based on their individual academic honesty history.

Please ensure that you understand the importance of academic honesty. Each member of the group is responsible to ensure the academic integrity of all of the submitted work, not just their own part. Placing your name on a submission indicates that you take responsibility for its content.

Team Member Names (Please Print)	Signatures	Student ID
Project Leader: Hassan Noorani	H.N	N01485518
Alfred Dowuona	A.D	N01490404
Adrian Portal Calcines	A.P	N01489363
Ali Mudasser Mohebi	A.M.M	N01477361

For further information read Academic Honesty Policy on <https://humber.ca/legal-and-risk-management/policies/search-by-students.html>.

By signing this contract, we acknowledge having read the Humber Academic Honesty Policy as per the link below.

Responsibilities of the Project Leader include:

- Assigning tasks to other team members, including self, in a fair and equitable manner.
- Ensuring work is completed with accuracy, completeness and timeliness.
- Planning for task completion to ensure timelines are met
- Any other duties as deemed necessary for project completion

What we will do if . . .

Scenario	Accepted initials	We agree to do the following
Team member does not deliver component on time due to severe illness or extreme personal problem	A.P H.N. A.D A.M.M	a) Team absorbs workload temporarily <u> X </u> d) Other:
Team member cannot deliver component on time due to lack of ability	A.P H.N. A.D A.M.M	a) Team reassigns component ____ b) Team helps member <u> X </u> b) Team "fires" team member by not permitting his/her name on submission ____ d) Other:

Team member does not deliver component on time due to lack of effort	A.P H.N. A.D A.M.M	<p>a) Team absorbs workload <u> X </u></p> <p>b) Team "fires" team member by not permitting his/her name on submission <u> </u></p> <p>c) Other:</p>
Team member does not attend team meeting	A.P H.N. A.D A.M.M	<p>a) Team proceeds without him/her and will assign work to the absent member <u> X </u></p> <p>b) Team doesn't proceed and records team member's absence <u> </u></p> <p>c) Team proceeds for that meeting but "fires" member after <u> </u> occurrences <u> </u></p>

<p>An unforeseen constraint occurs after the deliverable has been allocated and scheduled (a surprise test or assignment)</p>	<p>A.P H.N A.D A.M.M</p>	<p>a) Team meets and reschedules deliverable <u> X </u></p> <p>b) Team will cope with constraint <u> </u></p> <p>c) Other:</p>
<p>Team cannot achieve consensus leaving one member feeling "railroaded", "ignored", or "frustrated" with a decision which affects all parties</p>	<p>A.P H.N. A.D A.M.M</p>	<p>a) Team agrees to abide by majority vote <u> X </u></p> <p>b) Team flips coin <u> </u></p> <p>c) Other:</p>
<p>Team members do not share expectations for grade desired</p>	<p>A.P H.N. A.D A.M.M</p>	<p>a) Team will elect one person as "standards-bearer" who has the right to ask that work be redone <u> </u></p> <p>b) Team votes on each submission's quality <u> X </u></p> <p>c) Team will ask for individual marking and will identify sections by author <u> </u></p>

		d) Other:
Team member behaves in an unprofessional manner by being rude or uncooperative	A.P H.N. A.D A.M.M	<p>a) Team attempts to resolve the issue by airing the problem at team meeting __</p> <p>b) Team ignores behaviour __</p> <p>c) Team agrees to avoid use of all vocabulary inappropriate to the business setting <u>X</u></p> <p>d) Team fires the team member.</p>
Team member assumes or requests that his/her name be signed to a submission but has not participated in production of the deliverable	A.P H.N. A.D A.M.M	<p>a) Team agrees that this is cheating and is unethical __</p> <p>b) Friends are friends and should help each other <u>X</u></p> <p>c) That person name will not be put on the submission._</p>

There is a dominant team member who is content to make all decisions on the team's behalf leaving some team members feeling like subordinates rather than equal members	A.P H.N. A.D A.M.M	<p>a) Team will actively solicit consensus on all decisions which affect project direction by asking for each member's decision and vote <u> X </u></p> <p>b) Team will express subordination feelings and attempt to resolve issue —</p> <p>c) Other:</p>
Team has a member who refuses to participate in decision making but complains to others that s/he wasn't consulted	A.P H.N. A.D A.M.M	<p>a) Team forces decision sharing by routinely voting on all issues <u> X </u></p> <p>b) Team routinely checks with each other about perceived roles ____</p> <p>c) Team discusses the matter at team meeting ____</p>

Student Signatures for assignment participation:

A.D

H.N

A.D

A.M.M

Developer account:

Google Play Console

Search Play Console

All apps

Inbox2

Policy status

Users and permissions

Order management

Download reports

Account details

Developer page

Associated developer accounts

Activity log

Setup

Developer page

Manage the information shown on your developer page on Google Play [Show more](#)

* - Required fields

Developer name *

CaveBot

This is how your developer name will appear on Google Play7 / 50

Physical address

Shown on Google Play. You must provide a physical address if you sell paid apps or in-app products.0 / 1000

Enter a current, valid postal address where you can be contacted. If you offer apps or in-app items for sale, you must provide a postal address under our [developer terms](#) and consumer protection laws. Failure to do so may result in the suspension of your account and/or sales of your apps.

You must keep these details up to date. By providing your email or postal address information, you confirm that you consent to Google publicly displaying or disclosing that information in connection with your apps.

Github link repo:

<https://github.com/HassanNoorani5518/CaveExaminationBot>

Github Invitation:


Manage access

Add people

☐ Select all


Type ▾

☐

**AdrianPortalCalcines9363**
AdrianPortal9363 • Collaborator


Remove

☐

**AliMohebi7361**
Collaborator


Remove

☐


**Hak11**
haki11 • Collaborator

Remove

☐

**Lasergx25**
Collaborator

Remove



Get team access controls and discussions for your contributors in an organization.
NEW Private repos and unlimited members are free.

Create an organization

Project Background and Description:

Project goals and vision:

The cave exploration robot project's goals are to combine both hardware and software to create a robot that can safely navigate caves, mapping out interiors and providing environmental data for further analysing and determining if it is safe for human exploration.

Software and hardware:

The software will be developed using android studio, it will focus on developing an easy to use intractable interface so the robot can be controlled and monitored easily and safely. It will have all the necessary features like displaying readings, access settings on the robot remotely and being able to control it. The hardware components include sensors for collecting data such as hazardous gasses, temperature and humidity, interior mapping and robotic movement parts.

Screen flows:

There will be three screens in total, the main menu screen where you access the robot's settings and options. The second screen will display the collected data in a formatted and organized display. The third screen will have notifications displayed, this is less time critical information such as software updates, battery life, time and date, and any minor warning the robot may have.

Feedback:

We did not have a chance to go over the project or interview.

DB read/write:

We are planning on using mySQL for writing the sensor data to the cloud and later reading the data using the application. We will create the mySQL database on a linux virtual machine and host it. From the android studio app we will connect to the database, set up and execute queries such as SELECT and INSERT to handle data coming in and out of the database.

Project Scope:

The project will start with the planning phase, we will lay out the foundation and determine the functionalities the app will have, which database we are using for data gathering and reading, the specific functionalities of the robot, how we want to present the data gathered and overall how the app will look. Next we will begin development over the next few weeks completing the tasks layed out every week. This will be an agile development so if we find that some tasks require too much time we will reevaluate the decision to implement it. Since the project will be done as an agile development we will test our code every week so no major drawbacks happen near the end of the deadline. We will know when the project is complete when we have every theme complete and a working functional app, and every task in that theme has been tested and monitored for results.

Project Layout:

For the project's software app we will be implementing Bottom Navigation. Bottom navigation will be done with fragments as they

provide faster navigation, less memory usage and can retain their state to provide critical information and less buggy interface. The Bottom navigation will have 3 buttons located at the bottom with their icons representing their functions, the user can tap each button to move to the new screen and interact with it. The fragments will have the same style across since we want a simplistic and consistent UI structure. Most apps use bottom navigation as it's proven to be the easiest and simplest way for the user to interact with the app, some apps that use it are instagram, facebook, Youtube ect. The main reason why we will not be using TabsLayout is due to it being the same as bottom navigation but at the top of the screen, this is harder to access by the user's fingers since the buttons sit at the top the screen, also it is overall less aesthetically pleasing. Some apps that use TabsLayout are amazon, news apps, google chrome ect. The reason why we will not be using Navigation Drawer is due to the simplicity of our app, the app does not need more than 3 different tabs, notifications, main screen settings and data reading screens, therefore any other tabs or drawers will just get in the way of the user. Some apps that use navigation drawer are google drive, Youtube and Facebook, however all these apps have a lot more functionalities and screens.

Theme:

Theme:

User Interface Enhancement for Cave Exploration Robot Control App

Epic 1:

Robot Mobility and Control Theme: The first epic focuses on developing the robot's mobility and control systems, which are crucial for navigating the complex cave environments.

Story 1: Robot Movement Control

Task 1: Implement basic forward and backward movement.

Task 2: Develop turning and steering capabilities.

Task 3: Add obstacle detection and collision avoidance.

Story 2: Sensor Integration and Data Collection

Task 1: Integrate cameras for visual data collection.

Task 2: Integrate LiDAR sensors for 3D mapping.

Task 3: Integrate gas sensors for detecting valuable materials.

Story 3: Autonomous Navigation

Task 1: Develop algorithms for autonomous path planning.

Task 2: Implement Simultaneous Localization and Mapping (SLAM) for cave mapping.

Task 3: Create a control system for autonomous exploration.

Epic 2:

Material Detection and Mapping Theme: The second epic revolves around detecting valuable materials within the cave and accurately mapping their locations.

Story 4: Material Detection Algorithms

Task 1: Research and implement algorithms for identifying valuable materials based on sensor data.

Task 2: Develop a classification model for different types of materials.

Task 3: Integrate material detection into the mapping system.

Story 5: Geological Data Integration

Task 1: Establish a connection to external geological databases or APIs.

Task 2: Retrieve geological data relevant to the cave's location.

Task 3: Overlay geological data on the cave map for analysis.

Story 6: Remote Monitoring and Control

Task 1: Design a user interface for remote robot control and monitoring.

Task 2: Implement real-time data streaming for remote users.

Task 3: Enable remote users to interact with the robot's mapping and material detection features.

