Advanced Topics in Computer Science I
Assignment 4 – Individual Research Presentation

Date assigned:	**Friday, November 14, 2025**

Deliverables:
    1 Topic/Main Questions/Sources:
    2 Research Notes
    3 Presentation Draft
    4 Presentation Doc Due
    5 Presentation

    See Deliverable table below

Research Project

A significant portion of this course (25%) is dedicated to performing real research on a technical topic. After doing your research, you will produce a presentation, which you will present to the Computer Science faculty and 3rd year students on **December 15th or December 17th, 2025**. This presentation should be 15 minutes long.

The research will be done over the course of four (ish) weeks and you have interim deliverables to help you reach the final milestones. Once the research is completed, you will create your presentation. The table below lists the deliverables that are due each week.

Date Due	Deliverable
Friday. Nov. 24	Finalize on research topic – entered into master document
	List of main question(s) to be answered in research project
	10 credible sources to use
Friday. Nov. 27	Research notes (with sources)
	Outline of presentation approved by teacher
Friday. Dec. 5	First draft of presentation complete and submitted (Moodle)
Friday. Dec. 12	Final Presentation document due (Moodle)
Monday Dec 15	Final presentation to faculty & students *(Location TBD)*

Table 1: Deliverable Table for Assignment 4

Research Project Topic Ideas

Below is a list of ideas for areas of research. You can pick something from this list or come up with your own idea. You will then need to choose a more specific topic to research from this idea. It is important that you are interested in the topic, as you will be spending five weeks working on this project. Note that these topics are broad categories – your research needs to be focused on a narrow topic within one of these fields.

- ❑ Ethical hacking/ white hat hacking
- ❑ Encryption/decryption
- ❑ Other IT security topics
- ❑ DevOps
- ❑ Blockchain/NFTs
- ❑ Programming language trends
- ❑ NoSQL databases
- ❑ Data Mining/Data Warehousing
- ❑ Web Assembly
- ❑ Web Accessibility
- ❑ Progressive Web Apps (PWA)
- ❑ Single Page Apps
- ❑ Laravel – MVC Framework for PHP
- ❑ Python libraries for data analysis
- ❑ Optimization
- ❑ Machine learning/Neural networks
- ❑ Something in the Artificial Intelligence sector
- ❑ Biotech/nanotech (Medicine and CS)
- ❑ Diversity in data (Social responsibility in CS)
- ❑ Virtual or augmented reality
- ❑ 5G
- ❑ Innovations in Human Computer Interaction (HCI)
- ❑ Animation and movement
- ❑ Quantum Computing
- ❑ Or anything you can come up with that will be approved by the professor

Research Project Content

As part of your research project you can research the following areas. This is a general idea of the content – it depends on your topic and will be refined as you perform the research.

- ❑ What question are you asking about the technology? What do you want the reader to know at the end of reading your paper?
- ❑ Definition of the technology
- ❑ Brief background of the technology
- ❑ Current uses of the technology, including examples of how businesses or individuals use it
- ❑ Detailed research on the technology (this will vary from topic to topic)
- ❑ Issues related to the technology
- ❑ Future of the technology
- ❑ Ethical and moral considerations regarding the topic

Research Presentation Format

You must produce a visually appealing presentation based on the research that has been conducted.

The presentation must have the following:
- ❑ Title Page, containing the title of the research, author, course, instructor, and date
- ❑ Agenda
- ❑ Summary
- ❑ References, containing an alphabetical list of all references used in MLA 9th edition format. (https://cegep-heritage.libguides.com/citations/mla)
- ❑ Images to make the presentation visually appealing
- ❑ High level content on the slides with detailed information in the notes
- ❑ All images should be sourced in the notes page for each slide.

Your 15-minute research presentation will be presented to and assessed by the teachers in the Computer Science department and the other third year students. The other professors' and students' input will be considered advisory only. The course professor decides the full weight of the student mark.

When you prepare your presentation, it is important to keep your audience in mind and tailor it to the background of the audience.

The presentation will be evaluated on the following criteria:
- ❑ Required content, as stated above;
- ❑ Awareness of audience and presenting to that audience's general understanding;
- ❑ Perceived value of information delivered;
- ❑ Organization of the presentation, including an introduction, body and conclusion;
- ❑ Delivery of the presentation, including poise/appearance, proper pacing, delivery, voice and eye contact;
- ❑ Appropriate use of visual aids;
- ❑ Design of slides, spelling and grammar; and
- ❑ Appropriate documentation of works cited.
  https://cegep-heritage.libguides.com/citations/mla

Deliverable 1: Topic/Questions/Sources

1. Spend time researching and determine your topic. You must use primary sources and cite them. You can use other tools to help you find these valid research sources (including Google). You may not use AI or generative tools for this activity. You must be interested in the topic, have found that there are enough sources and have the topic approved by the teacher.

2. For your chosen topic, complete the following steps in preparation for undertaking the research:
a) List the main question that your research will address.

b) List 10 subsequent questions to be answered in your research.
c) The target audience is the Computer Science faculty and third year students. Describe their characteristics. The purpose of this is to ensure that you are targeting your research at the right level for your audience.
d) List the keywords that will help with online searching to do the research.

3. Read the following website about how to properly evaluate Internet sources. We discussed in class about the importance of ensuring a website used in your research is credible. Your research project cannot proceed unless you have credible sources.
See this link for more info: https://cegep-heritage.libguides.com/evalinfo

4. Using the Internet, identify ten possible sources of information for your research topic. Provide the links for the 10 sites – remember that they must be credible sources (generally, no blogs, unless they are written by an expert in the field).

Deliverable 2: Research Notes/Outline

1. Spend time researching and gathering information on your topic. Keep a database of your notes in jot note form. (Word document, Excel spreadsheet, whatever format you prefer). For each point in your research notes, you must record the source of the data. I suggest a table with a column for the notes and a column for the reference. The notes should not just be a cut and paste of information from websites. You must keep notes in your own words. Hand in the notes.

2. Prepare an outline of the presentation – a high level list of the content of each slide. For a 15 minute presentation, there should be about 15 slides, as a guideline. Discuss the outline with the teacher.

Deliverable 3: Draft Presentation

1. Develop a PowerPoint or a Prezi presentation based on your research paper. Name the document **YourUserName_G40_A04_Presentation_Draft.** The presentation must include the following items:

   ❑ A Powerpoint/Prezi template that is visually appealing
   ❑ A cover slide with your name, topic, course, teacher and date
   ❑ An introductory slide introducing the agenda
   ❑ Slides covering each of the sections in your presentations. Your presentation should be 15 minutes long. You should have approximately 15 slides. Note that your presentation should focus on the **technical details of the technology** and its future and less on the background of the technology.
   ❑ A concluding slide with your summary and recommendations.
   ❑ A list of works cited (not included in the 15 slide count)

Review the draft with the teacher to get feedback.

2. You have probably needed to do some additional research and have added to your research notes. If this is the case, hand in the updated research notes.

Final edits

1. Update your presentation based on feedback from the teacher and continue to polish the presentation. Show the teacher, to get more feedback. Go over the checklist for the presentation to ensure you have not missed anything.

2. Practice the presentation!

Marking Scheme

	Out Of	
Deliverable 1 – Topic, Questions, Sources	10	
Deliverable 2 – Research Notes, Outline	10	
Deliverable 3 – Draft Presentations	10	
Process Engagement – Student Interaction, Questions, Following the Methodology, Overall Presence	15	
Final Presentation	55	
Total	**100**	