INFO1111: Computing 1A Professionalism

2024 Semester 1

Skills: Team Project Report

Submission number: ?? Add your details

Github link: ?? Add your details

Team Members:

Name	Student ID	Target * Foundation	Target * Advanced	Selected Major
ZHU, Yiqi (Ashley)	540092536	A	NA	Computer Science
FAMNAME2, givenName2	01234567	A	NA	Data Science
Nguyen, Ngoc Minh Khue (Helen)	540052976	A	NA	SW Development
Funaki, Yayoi	540612965	A	NA	Cyber Security

* Use the following codes:

- NA = Not attempting in this submission
- A = Attempting (not previously attempting)
- AW = Attempting (achieved weak in a previous submission)
- AG = Attempting (achieved good in a previous submission)
- S = Already achieved strong in a previous submission

Contents

1. Task 1 (Foundation): Core Skills

Throughout your Computing degree we will help you learn a range of new skills. Once you graduate however you will need to continue to learn new languages, new tools, new applications, etc. Task 1 focuses on core technical skills (related to LaTeX and Git) and the key technical skills used in different computing jobs. Each member of the team should individually complete their subsection below. You should begin by allocating to each team member a different major to focus on (i.e. one of: Computer Science; Data Science; Software Development; Cyber Security). If you have a fifth member, then your tutor will suggest a fifth topic to cover. This allocation should be specified above (see lines 37-56 in the LaTeX file).

For this section each member of your team needs to select one of the majors provided and identify 3 key technical skills that you would need to be able to work in the industry of your allocated major. You should then put these in order from most required to least required, and for each one explain why it is a key skill required for the industry of your major. You must use the skills framework for the information age "SFIA" to identify at least 2 out of the 3 key tech skills. (Target = ~100 words per skill = ~300 words total, per student).

Begin by looking at the list of skills identified within SFIA (Skills Framework for the Information Age) [1]. Then select two skills from the complete list. The skills you select should be skills you believe are the most required key technical skills relevant to the major you have selected. You should explain why each skill is a key technical skill and necessary for that major.

You will need to integrate your information into the shared collaborative LaTeX document and compile the result.

OVERALL REQUIREMENTS:
To achieve an "OK" rating for this task you must individually accomplish the following:

- Each member of your team **has been** allocated a different major (Computer Science, Data Science, Software Development, Cyber Security).

- Each member of your team **has identified** 3 key technical skills that you would need to be able to work in the industry of your allocated major.

  - These must be in order from most required to least required.
  - Each skill must have an explanation on why it is a key skill required for the industry of the major (~100 words per skill).
  - At least 2 out of the 3 key tech skills must be identified from the skills framework for the information age SFIA.

- Github, LaTeX & LaTeX

  - Your team has created a team repository on Github for the project and put a copy of the LaTeX template, bib file, and image file into the team repository (only needs to be done by one member of your team).
  - The information for 'Task 1' has been compiled into the shared collaborative LaTeX document using the template provided on Canvas with your team members sections - you have edited the LaTeX template to include your chosen major and the 3 key tech skills for the major.
  - You have cloned the team repository to your local machine.

- Provide evidence that you can compile from the command line (provide screenshots of the command entered and output).
- Provide evidence that you can commit to your local repo (provide screenshots of the steps taken to commit to their local repo).

- Referencing

  - You have provided in-text references (IEEE) to support your claims or where they gathered the information from.
  - You have a reference list following the IEEE referencing guidelines.
  - Some common things to look for to see whether your have correctly followed the referencing guide are:
    * Sources are listed in alphabetical order
    * The sources you have listed are only the sources that are present in-text.
    * All sources seen in-text are included in the reference list.
    * You followed the correct convention for references that don't have author's details or multiple sources have the same author and year of publication
    * You have included the required information for the source type as outlined in the guide.
    * Sources are not a list (i.e. dotpoints)

To achieve a "STRONG" rating, you must individually accomplish all of the above in addition to the following:
Demonstrated the following to your tutor during the tutorial:

- You are able to retrieve your team's shared repo

- You are able to make changes, recompile, commit changes, and push back to repo.

- Note: you should also provide screen-shots of relevant actions taken to make changes, recompile etc. does not require you to provide evidence of detailing conflicts.

1.1. Skills for Computer Science: ZHU, Yiqi (Ashley)

YEAHHHHHHH!

1.2. Skills for Data Science: FAMNAME2, givenName2

Your text goes here

1.3. Skills for SW Development: Nguyen, Ngoc Minh Khue (Helen)

1. Programming [2]
   Programming is the most essential skill as without it, no software can ever be developed. Code is the base foundation of all software therefore it is necessary to improve and attempt to master this skill for a major all about the production or enhancement of software. Computers can only understand our instructions through code therefore when creating new software, software development majors must be able to program well in order for the computer to understand what the user is trying to output. Furthermore, through programming, it can also help with our problem solving skills [3] as we learn to create a solution for an issue by writing code and

developing it to become software and by solving minor bugs from the mistakes whilst writing said code.

2. Software Design [4]
   During the development of software, there are many aspects such as the interface, the code, the architectural and design and database storage for example that is needed [5] . Due to the plethora of steps, it is important to design a well thought out blueprint so the development team knows exactly what the problem is and the different steps it takes to produce a solution. In case something goes wrong, we are able to go back to the original design and see exactly what the issue was to modify and refine the software further [6] . The possession of this skill is also super important in a team environment as eliminates most confusion between team members since there is a clear plan to follow and each person can be assigned a different issue to solve which makes things more efficient as well.

3. Testing [7]
   After designing and developing the program, it is important to test the software to ensure it is solving whatever we issue we need without running into any bugs. Also, to have this skill, it's useful to create testing techniques that target different objectives such as security or performance [8] to ensure the software is running efficiently and can help us find areas that need improvement. By frequent testing using different methods, this allows us to catch any issues and fix them quickly, thus reducing the time and cost of developing the software [9] . The importance of this skill can also be seen, not only through how the software is programmed but also through the user experience as we can test for ease of use, speed as well as the interface to ensure it is suitable for the general market, making our product more marketable.

1.4. Skills for Cyber Security: Funaki, Yayoi

Your text goes here

2. Task 2 (Advanced): Advanced Skills

Task 2 contains two components (both required).

Component 1: Exploration of Tech Tools

The first component focuses on exploration of relevant tech tools used within professional computing employment. All companies make use of a range of technologies and tools (often as part of a tech stack). These tools might be implementation languages; design tools; data analysis tools; collaboration technologies, etc. Each student should identify two tools that are widely used in industry, and which relate to the major you are focusing on for this project. You should then describe:

1. What are the two tools you have identified for your chosen major

2. The main functionality of those tools;

3. The ways in which those tools are used in the industry of your chosen major;

4. Any weaknesses or limitations of those tools.

This task consists of two parts:

1. **Part A**: Generate a set of questions that you can put to ChatGPT in order to obtain answers to each of the above four questions. Using ChatGPT, then generate the answers for each of the two tools. You must include in the report below both the questions that you posed to ChatGPT, and the answers that it provided. (100–250 words each).

2. **Part B**: For each of the four answers from Part A, assess the answer that ChatGPT provided and explain to us why you agree or disagree with the answer (100 words for each question above).

As examples of the tools which might be selected (which you shouldn't now use):

- Computer Science: Eclipse.

- Software Development: GitHub.

- Cyber Security: Wireshark.

- Data Science: Hadoop.

Note also that no two students in the same tutorial should choose the same tools, so your tutor will maintain a list of those that have already been selected. You should therefore check this list with your tutor and then confirm your choice with your tutor prior to researching your proposed tools and spending time writing about them. (Target = ∼200-400 words per tool).

Component 2: Advanced LaTeX and Git Skills

The second component of Task 2 focuses on more advanced technical skills in LaTeX and Git. The following is a list of advanced Git and LaTeX skills/features. Each student in your team that is attempting the Advanced task should select a different pair of items from each list (e.g. you might choose "Resetting and Tags" from the git list, and "Cross-referencing and Custom commands" from the LaTeX list). You then need to demonstrate

actual use of each item (either through activity in Git, or through including items in this report). (Target = ~100-200 words per student for each feature).

1. Git

   (a) Rebasing and Ignoring files

   (b) Forking and Special files

   (c) Resetting and Tags

   (d) Reverting and Automated merges

   (e) Hooks and Tags

2. LaTeX

   (a) Cross-referencing and Custom commands

   (b) Footnotes/margin notes and creating new environments

   (c) Floating figures and editing style sheets

   (d) Graphics and advanced mathematical equations

   (e) Macros and hyperlinks

OVERALL REQUIREMENTS:
To achieve an "OK" rating for this task you must individually accomplish the following:

- **Component 1 - Exploration of Tech Tools**
  - Identified two tools that are widely used in industry, and which relate to the major chosen for this project.
    * The two tools selected are not the same as the tools selected by other students in the tutorial.
    * The two tools selected are relevant to the major chosen.
  - Answer the following questions as instructed in 'Part A' & 'Part B':
    * What are the two tools you have identified for your chosen major
    * 3 main functionality of each of the identified tools
    * The ways in which those tools are used in the industry of your chosen major;
    * 2 weaknesses or limitations of each of the tools
  - **Part A**: Generate a set of questions (minimum 5 questions) that can be put to ChatGPT in order to obtain answers to each of the above four questions. Using ChatGPT, then generate the answers for each of the two tools. You must include in the report below both the questions that you posed to ChatGPT, and the answers that it provided. (100 - 250 words for each question)
  - **Part B**: For each of the four answers from Part A, assess the answer that ChatGPT provided and explain to us why they agree or disagree with the answer (100 words for each question above).

- **Component 2 - Advanced LaTex & Git Skills**

- Each member of the team has selected one pair of items from each list below and demonstrate actual use of each item (i.e. a Git item and a LaTeX item).
- **Git**
  * Rebasing and Ignoring files
  * Forking and Special files
  * Resetting and Tags
  * Reverting and Automated merges
  * Hooks and Tags
- **LATEX**
  * Cross-referencing and Custom commands
  * Footnotes/margin notes and creating new environments
  * Floating figures and editing style sheets
  * Graphics and advanced mathematical equations
  * Macros and hyperlinks
- This means no two members of the team have not chosen the same item from either of the lists above.
- You have demonstrated the use of your selected items either through activity in Git, or through including items in this report.
- This means for Git items:
  * You have added your tutor to your git repository and when they view it they are able to see your activity that demonstrates the use of your selected items (e.g. forks, hooks, tags, merges etc.).
  * You have included screenshots and annotations (where necessary) in your report and provided an explanation of ~100 words of your use of advanced Git features.
- and for LaTeX items:
  * You have included items you have chosen in your LaTeX report document submission and the tutor is able to clearly see it (e.g. the pdf document written in LaTeX has hyperlinks, macros, cross referencing etc. included in it).
  * You have included screenshots and annotations (where necessary) in your report and provided an explanation of ~100 words of your use of advanced LaTeX features.

- Referencing
  - You have provided in-text references (IEEE) to support your claims or where they gathered the information from.
  - You have a reference list following the IEEE referencing guidelines.
    * Some common things to look for to see whether your have correctly followed the referencing guide are:
    * Sources are listed in alphabetical order
    * The sources you have listed are only the sources that are present in-text.
    * All sources seen in-text are included in the reference list.

* You followed the correct convention for references that don't have author's details or multiple sources have the same author and year of publication
* You have included the required information for the source type as outlined in the guide.
* Sources are not a list (i.e. dotpoints)

To achieve a "STRONG" rating you must accomplish all of the above in addition to the following:

- The answers provided to the 4 questions (component 1b) use ChatGPT and independent research and analysis is excellent, showing a deep understanding of industry.

- You have used advanced Git features such as branching when demonstrating the items you selected (component 2a).

2.1. Tools and Skills for Computer Science: ZHU, Yiqi (Ashley)

Part A: Exploration of tech tools

Your text goes here

Part B: Analysis

Your text goes here

Technical Skills (LaTeX and Git)

Your text goes here

2.2. Tools and Skills for Data Science: FAMNAME2, givenName2

Part A: Exploration of tech tools

Your text goes here

Part B: Analysis

Your text goes here

Technical Skills (LaTeX and Git)

Your text goes here

2.3. Tools and Skills for SW Development: Nguyen, Ngoc Minh Khue (Helen)

Part A: Exploration of tech tools

Your text goes here

Part B: Analysis

Your text goes here

Technical Skills (LaTeX and Git)

Your text goes here

2.4. Tools and Skills for Cyber Security: Funaki, Yayoi

Part A: Exploration of tech tools

Your text goes here

Part B: Analysis

Your text goes here

Technical Skills (LaTeX and Git)

Your text goes here

3.   Submission contribution overview

For each submission, outline the approach taken to your teamwork, how you combined the various contributions, and whether there were any significant variations in the levels of involvement. (Target = ~100-300 words).

3.1. Submission 1 contribution overview

As above, for submission 1

3.2. Submission 2 contribution overview

As above, for submission 2

3.3. Submission 3 contribution overview

As above, for submission 3

Bibliography

[1] SFIA, "The global skills and competency framework for the digital world," 2022, see https://sfia-online.org/en/sfia-8/all-skills-a-z.

[2] ——, "Programming/software development," see ȟttps://sfia-online.org/en/sfia-8/skills/programming-software-development.

[3] Codiska, "Why programming is important, today, and for the future?" Mar 2022, see ȟttps://codiska.com/articles/why-programming-is-important/.

[4] SFIA, "Software design swdn," see ȟttps://sfia-online.org/en/sfia-8/skills/software-design.

[5] Singh, Charanjeet, "The importance of a design in software development," Oct 2023, see ȟttps://www.searchmyexpert.com/resources/software-development/design.

[6] IEEE Computer Society, "Why software design is important," see ȟttps://www.computer.org/resources/importance-of-software-design-is-important.

[7] SFIA, "Testing test," see ȟttps://sfia-online.org/en/sfia-8/skills/testing.

[8] IBM, "What is software testing?" see ȟttps://www.ibm.com/topics/software-testing.

[9] Baweja, Megha, "Why is software testing important?" see ȟttps://www.engati.com/blog/importance-of-software-testing.