SINGAPORE INSTITUTE OF TECHNOLOGY

INF1005 - Web Systems and Technologies

Generative AI Assignment

Analysis of AI Coding Tools

1. ASSIGNMENT OVERVIEW

1.1 In this exercise, students will analyse the output of selected generative AI (gAI) tools for a given prompt, within the context of website development. The goal is to determine the strengths, limitations, and risks of current gAI systems, and to be more aware of the typical errors and shortcomings found in AI generated website content so that students can be more vigilant when using these tools. The criteria for evaluation will be derived from the knowledge learned in the module, e.g. responsive design, accessibility and WCAG compliance, standards and W3C validation, secure form processing and best practices.

2. SELECTION OF GENERATIVE AI TOOLS

2.1 For this assignment, you'll need to select any TWO (2) generative AI tools of your choice. Criteria to consider in making your selection include:

- **Full application generation capabilities** – some AI coding tools only provide autocomplete/code completion, refactoring, search and other limited functions. For this exercise, you will need tools that can generate complete, full stack web applications.
- **Cost** – you should not have to incur any personal costs to complete this assignment. Fortunately, many gAI tools provide free tier or free trial options, though with varying limitations.
- **Integration with Visual Studio Code** – while not essential, it is desirable for the tool to work well with our existing development environment. gAI tools that offer Visual Studio Code extensions are advantageous.
- **Model selection** – ideally the tool should be utilizing the current generation of LLMs. Some tools will also allow you to select different models or use your own custom models (via MCP).

2.2 The following table lists of some of the more popular code generation tools for your consideration:

Tool	Free Tier / Free Trial	VS Code Integration
GitHub Copilot	Yes (50 agent mode or chat requests per month, 2,000 code completions per month)	Yes, via extension
Gemini Code Assist	Yes (6,000 code completions per day, 1,000 model requests per day, 240 chat engagements per day)	Yes, via extension
Google Antigravity	Yes – refer to the Individual Plan for details (currently a *Public Preview* thus subject to change)	*Sort of* – Antigravity is a fork of VS Code, providing its own custom IDE.
Cursor	Yes (convoluted usage limits)	*Sort of* – Cursor is a fork of VS Code.
Windsurf (formerly Codeium)	Yes (25 prompt credits per month)	Yes, via extension
Claude Code	No (requires paid Pro subscription of Claude)	Yes, via extension
Claude	Yes (convoluted usage limits)	No
Codex	As of Feb 2026, Codex is included with ChatGPT Free for a *limited time*.	Yes, via extension
ChatGPT	Yes (convoluted usage limits)	No

2.3 The above list is by no means exhaustive. If there are other code generation tools that you wish to use for this assignment, you certainly may.

3. METHODOLOGY

3.1 Using the standard prompt provided in section 4 below, you will instruct each of your selected gAI tools to generate a complete web application. You will then perform an in-depth analysis of the output from your code generation tools and submit your results (refer to sections 5 & 6).

3.2 Remember that the goal of this assignment is NOT to create a fully functional website, rather your aim is to evaluate and compare the output of the selected gAI tools, as is. Therefore, *you should not engage in any "vibe coding" or make any changes to the generated code*. However, you may make changes to your VS Code configuration in order to get the websites

to run if needed (e.g. setting up the PHP configuration as we did in Lab05). Additionally, you may need to manually copy files and organize the generated content before you can run the website, depending on how the gAI tools operate.

3.3 You should have two separate AI generated websites when finished.

4. THE PROMPT

4.1 The following prompt is to be used for generating the web applications:

```
Create a website that serves as an onboarding wizard for new users
who are joining a community group for pet lovers. The website must
be a full-stack web application using PHP on the server side and
HTML, CSS, Bootstrap and JavaScript on the client side. For the
database, use a plain text flat-file in CSV format. The onboarding
workflow should consist of the following steps:

1) Username and Password - allows users to set their username and
initial password.

2) Personal Info - allows users to add their name and contact
information.

3) Profile Photo - allows users to upload a picture for their public
profile.

4) Pet Info - allows users to input details about the pets they
currently own, including pet name, breed, age, and photo.

5) Confirmation and Save - allows users to save everything they've
entered in the onboarding wizard.

Each onboarding step should be presented on a separate page with
next and previous buttons for easy navigation. Once users have
successfully completed the onboarding process, they can subsequently
log in and view the profiles of other users. They should also be
able to edit all of their information, except for the username, and
have the option to delete their profile entirely.
```

4.2 **IMPORTANT**: be sure to copy & paste this exact prompt and do not make any changes or additions to it, and do not provide any additional prompting to the gAI tools. You may, however, answer any questions or provide information that the tools need in order to complete the task. For example, they may ask your permission to save files, execute shell commands, etc.

5. ANALYSIS

5.1.1 After generating the two websites and getting them running, test each one by creating a new account with the following credentials:

- **username**: your SIT admin number (or your SIT email address if the form requires a full email address)
- **password**: `ILove1005!`

IMPORTANT: you must create at least one account with the above username and password. You can create as many additional accounts as you wish.

5.2 Proceed to thoroughly test and evaluate both websites based on the following criteria:

- Prompt Accuracy - describe how well the gAI tools did at following the instructions given in the prompt. For example, did it use the correct stack/languages, were all features implemented, did it add features that weren't requested, etc.
- Errors & Bugs - describe any errors or bugs discovered in the generated app, including extraneous code, obsolete or deprecated code, missing functions, hallucinations, etc.
- Accessibility - discuss how well the gAI did at adhering to WCAG standards. Also state which accessibility testing tool(s) and any other methods you used in your analysis.
- HTML5 Standards - describe any HTML5 validation issues discovered in the output.
- Responsive Design - report on how the generated website handles different screen sizes and orientations.
- Features & Functionality - discuss how well the gAI performed in terms of implementing the requested features and how the website functions.
- Security and Form Processing - describe any security related issues discovered in the generated app, including form validation & sanitization.
- Summary and Overall Impression - summarize your thoughts on how the gAI tools performed overall, any difficulties in setting up the tool or getting it to generate the code, etc. Also give your opinion on which tool performed best or was most useful.

6. ASSIGNMENT SUBMISSION

6.1 There are two parts required for this submission:

- **Dropbox** – you are to submit BOTH of your AI generated web applications to the designated Dropbox folder as .zip files (follow the same procedure as the Lab assignments to ZIP up the entire folders containing the generated code). Name the files according to the gAI tool used. For example, if your selected tools were ChatGPT and Claude, the files you submit to the Dropbox would be `chatgpt.zip` and `claude.zip`. As a reminder, you should not make any changes or bug fixes to the generated code – it's to be submitted "as is".

- **gAI Assignment Questionnaire** – you must complete the questionnaire on xSiTe (Assessments->Quizzes) in order to submit your analysis. Note that only one submission is allowed, thus you should not submit until you have finished answering all of the questions. You may save as draft and return to continue answering as often as you like, up until the submission deadline.

6.2 This assignment is due on **Sunday, 1 March 2026 at 23:59**. Please note that late submissions cannot be accepted.

7. ASSESSMENT

7.1 You will be assessed based on how well you apply the lessons learned in this module in your analysis of the generated websites and the thoroughness of your evaluation of the gAI tools.

7.2 This is an **individual assignment** and must consist of your own **original work.** Refer to the Student Disciplinary Policy for guidance.