code sprint MT NATIONAL CODING COMPETITION

Preparation Booklet

Open Category 2025

POWERED BY me direct

GOVERNMENT OF MALTA
MINISTRY FOR EDUCATION,
SPORT, YOUTH, RESEARCH
AND INNOVATION

icecampus

Table of Contents

Hello

Welcome to the CodeSprintMT 2025 competition. During this competition, you will be flexing your coding, infrastructure, and UI/UX design muscles to create an app!

This booklet provides a brief overview of the rules and regulations of the competition, as well as providing some resources to help you prepare.

We wish you the best of luck in the competition!

From the CodeSprintMT Open Category judging panel.

Technical Overview

During the competition, you will be designing and building an app.

The judging panel has created a reference implementation of this app in one working day. This is to ensure that the task given is possible within the timeframe allocated.

Platform

Your app can run on any platform. This includes Windows, macOS, Linux, Android, iOS or the web. We recommend a web-based platform be developed; however, this will not affect points awarded and is simply for the app to be usable on as many platforms as possible.

Development Environment

You are free to use any development environment you wish. However, do note that you must provide all source code to the judging panel, as well as instructions on how to setup an environment which allows the judges to run the solution on their workstation.

Preparation Resources

The following resources will help you to prepare for the task. Remember you can use any technology you are familiar with.

Topics you must know (This is the important stuff)

1. Building an application with a graphical user interface, either on desktop, mobile or web (you will be able to choose any platform).
2. Rendering charts and graphs on the platform of your choice.
3. Interacting with a REST API.
4. Interacting with an API provided by a Large Language Model (e.g.: OpenAI, Microsoft Copilot, Anthropic Claude, etc).

Topics you should know

1. Interacting with a mock OpenBanking API (read only). You don't need to use the actual API for the final task, just understand the basics of what you can do with it.
2. Building a browser extension.
3. WhatsApp Integration.

The next page contains resources to help you prepare for any topics you may not be familiar with.

Recommended Reading

Rendering Charts & Graphs

- On the web: https://www.chartjs.org/docs/latest/
- Android:
    - https://github.com/ehsannarmani/ComposeCharts
    - https://github.com/PhilJay/MPAndroidChart
- iOS: https://developer.apple.com/documentation/charts

Interacting with a REST API

- https://restfulapi.net
- https://www.youtube.com/watch?v=Q-BpqyOT3a8

LLM APIs

- OpenAI: https://platform.openai.com/docs/overview
- Microsoft Copilot: https://learn.microsoft.com/en-us/microsoft-365-copilot/extensibility/copilot-apis-overview
- Anthropic Claude: https://www.anthropic.com/api
- Google Gemini: https://ai.google.dev

Open Banking API

Note: for the purposes of this task, you do not need to learn the Open Banking API! You will however need to mock an end point for basic, read-only use. Implementing an oAuth2 authentication flow is similarly not required.

- Mock bank (free to use): https://www.mockbank.io.
  Also check out their documentation at:
  https://jrholding.atlassian.net/wiki/spaces/MPD/pages/685670401/Introduction+to+MockBank
- Mocking an API:
    - https://designer.mocky.io
    - https://github.com/typicode/json-server

Browser Extension Development

- Chrome-based: https://developer.chrome.com/docs/extensions/
- Firefox (Gecko)-based: https://extensionworkshop.com
- Safari (WebKit)-based:
  https://developer.apple.com/documentation/safariservices/safari-web-extensions

Creating a WhatsApp Integration

- https://developers.facebook.com/docs/whatsapp/
- https://www.youtube.com/watch?v=4cvQxqFZTIQ
- https://medium.com/%40ammarbinshakir557/whatsapp-api-integration-with-node-js-f915cad3cc3b

AI-Assisted Coding

Intro

The aim of the CodeSprintMT competition is to reward developers who can solve problems quickly and creating prototypes and proof-of-concept apps for real-world scenarios. In 2025, that will inevitably involve the use of AI-assisted development.

Ok, so can I use AI?

Yes. In fact, it is expected that you will.

Do I have to comment sections created by AI for attribution?

No. AI-created code is a result of your prompt and existing work. The AI does not “own” any code it generates, you do. Commenting sections created or enhanced with AI is impractical and results in messy code files.

Will the use of AI be penalised?

No, if you understand what the AI has created for you. During the VIVA of your submission, you may be asked to explain certain parts of your code. If you can fully explain what your code is doing, there is no penalty for using AI, or indeed the need to disclose which parts of your code were written by AI.

Note, however, that you should always verify any code generated by AI (or indeed, code samples you retrieve via traditional means) for correctness and security. If your code is messy or insecure, you will be penalised, regardless of who or what wrote it!

Judgement Criteria

Your submission will be given a maximum of 210 points plus additional features. The criteria by which points are awarded are detailed below. **Note that you do not need to achieve all the criteria**, however, the more criteria you achieve, the greater your chances of winning!

Criterion	Notes	Maximum Points
Core Functionality		
[M1.1] **	*Something related to displaying data…*	**10**
[M1.2] **	*Something related to categorisation of data…*	**20**
[M1.3] **	*Something related to data visualisation…*	**15**
[M2.1] **	*Something related to manual data categorisation…*	**15**
[M2.2] **	*Something related to trend analysis…*	**15**
**[M2.3] **	*Something related to rule-based recommendations…*	**15**
UI/UX		
Neat/Aesthetically pleasant user interface	Rather than 'flair', we are looking for a neat, organized and functional UI	**10**
App is easy to use	The user should not need a manual to use the app	**5**
Responsiveness	The app should be usable on different screen sizes.	**10**
Code Quality		
Code is organized into packages/modules/units etc.		**5**
Separation between presentation and logic layers	For example, using a REST API model	**10**
Consistent and correct use of a programming paradigm	Such as OOP, AOP, functional etc.	**5**
Function cohesion	Functions should be kept small, and do one thing, without being too dependent on other functions	**5**
Inline documentation	i.e. comments	**5**
Maintainable code	Ex: use of abstract classes, interfaces, function prototypes etc. Depending on the programming paradigm chosen	**5**
Additional Functionality/Features		
[S1.1] **	*Something related to basic formulae…*	**10**
[S2.1] **	*Something related to using an LLM API…*	**20**
[C1.1] **	*Something related to browser extensions…*	**15**
[C2.1] **	*Something related to WhatsApp integration…*	**15**
Additional Features	*Additional features not present in these requirements will be graded up to a maximum of 15 marks.*	

*** These will be revealed in the task booklet.*

Submission Criteria

At the end of the time allocated to this competition, you must submit your code to the judging panel. The code, including all assets and other resources, must be submitted as a folder or compressed archive.

You will also be required to demonstrate your application running.

Rules and Regulations

1. All Student, Graduate and Professional Developers are eligible to participate.
2. Participants are free to use any tech stack of their choice, including programming languages, frameworks, libraries, and tools they are most comfortable with.
3. The session will be held in-person at ICE Malta (Zebbug) using a bring-your-own-device model. Internet access and an optional extended monitor will be provided. Participants are responsible for ensuring their device is fully functional, pre-loaded with any required software or tools, and equipped with the necessary cable to connect to the extended monitor.
4. All participants will work individually (this is a solo challenge). Strict security protocols will be in place throughout the competition. Any attempt to plagiarise or receive help from another person will result in immediate disqualification.
5. Participants are expected to maintain a respectful environment during the session. This includes keeping noise to a minimum, avoiding unnecessary conversation, and not distracting others. Silence is to be observed throughout the competition room unless speaking with an organiser or judge.
6. Participants are allowed to use AI tools responsibly as part of their workflow. You are not required to comment or attribute AI-generated sections, but you must understand your code and may be asked to explain it during the viva. Messy, insecure, or unverifiable code will be penalised. For full AI usage guidelines, refer to the AI-Assisted Coding section in this document.
7. The entire session will be recorded via CCTV for security and integrity purposes.
8. During the session, it is mandatory that participants:
    a. maintain healthy habits and take short breaks,
    b. submit their task by 5.00PM, which must include:
        i. the completed solution
        ii. a brief screen recording created after the coding session, showing how the code is compiled, set up, and run (ideally including a quick walkthrough of the output or product created)
    c. undergo a 10-minute viva session and expected to answer the judges queries/concerns.
9. By attending, participants agree to be photographed and/or filmed during the event. Content may be used by the organizers for marketing and recap purposes.

Terms and Conditions

1. **Right to cancel or modify**
   CodeSprintMT reserves the right to cancel, suspend or modify the challenge if any problem prevents the challenge from running as planned.
2. **Release**
   All participants agree to release and hold CodeSprintMT harmless from and against any claim associated with the challenge/event.
3. **Limitation of liability**
   CodeSprintMT is not responsible and cannot be held liable for technical errors or other things that may prevent the challenge from running as planned.
4. **Right to substitute**
   CodeSprintMT reserves the right to substitute the awarding prizes with another prize if the advertised prize is not available.
5. **Permission to take screenshots of online sessions**
   CodeSprintMT reserves the right to take screenshots during online contest session/s which will be used as evidence for accreditation purposes only.
6. **Permission to store participants' work**
   CodeSprintMT reserves the right to store the work submitted by the participants to up to 10 years for accreditation purposes.
7. **Disqualification**
   You may be disqualified from CodeSprintMT contest and forfeit any prizes you may be eligible to receive if the organizer reasonably believes that you have attempted to undermine the legitimate operation of the contest according to the Contest Rules & Regulations. You may report violation of these terms by another contestant by contacting us.