

PROGRAMMING

SAINTS GLOBAL MEMBER

NAME: _____

BATTALION: _____

TROOP: _____

SKILL BADGE ADVISOR

NAME: _____

EMAIL: _____

PHONE: _____

STEP 1 | DISCOVER

INITIALS

- a) Complete a digital safety briefing approved by your parent/guardian and leader (e.g., a Digital Safety video) and explain two rules you will follow to protect yourself and others online. _____
- b) Discuss prevention and first aid for programming-related injuries (repetitive strain, eyestrain) and demonstrate an ergonomic workstation setup. _____
- c) Explain the history of programming and language evolution by describing at least three major milestones and why each mattered. _____
- d) List five popular programming languages and describe industries where each is commonly used, then name three programmed devices you rely on daily. _____

STEP 2 | PLAN

INITIALS

- a) Explain four types of intellectual property (copyright, patent, trademark, trade secret) as they relate to software, and explain licensing vs owning software (including freeware, open source, and commercial terms). _____

b) Select three programming languages and development environments you will use for this badge and define a simple input→decision→output project for each. _____

b.1) Name each language and environment (IDE/editor/runtime) _____

b.2) Define the input type(s) and the expected output(s) _____

b.3) Identify at least one decision point (if/else, match, branching logic) in each program _____

b.4) Describe how you will test and debug each program _____

c) Define what 'agentic programming' means and plan an agent workflow that includes tools, constraints, and human approval checkpoints. _____

c.1) Define the agent's goal and what it is NOT allowed to do _____

c.2) Identify at least two tools the agent may use (e.g., calculator, file search, web requests in a safe sandbox, API calls where permitted) _____

c.3) Add an approval step before any external action (send, buy, post, delete, publish, or run code on a real system) _____

c.4) List three failure modes (bad data, hallucinated facts, prompt injection) and the guardrails you will use _____

STEP 3 | ACT

INITIALS

a) Build, debug, and demonstrate Program 1 in Language/Environment #1 that takes user input, makes at least one decision, and produces computed output. _____

a.1) Demonstrate the program running with at least three test inputs _____

a.2) Explain the decision logic and what conditions trigger each path _____

a.3) Identify one bug you encountered (or intentionally introduce one), then show how you debugged it _____

a.4) Explain how you would improve readability (naming, comments, structure) _____

- b)** Build, debug, and demonstrate Program 2 in Language/Environment #2 with different input and decision logic than Program 1. _____
 - b.1)** Use a different decision structure than Program 1 (e.g., loops + branching, pattern match, or data lookup) _____
 - b.2)** Demonstrate the program with at least three test inputs _____
 - b.3)** Explain how this language/environment changes development (tooling, syntax, runtime) _____
 - b.4)** Explain one tradeoff of this language for this problem _____

- c)** Build, debug, and demonstrate Program 3 in Language/Environment #3 with a new type of input/output (e.g., file, JSON, simple UI, or command-line arguments). _____
 - c.1)** Accept input from a different channel than Programs 1–2 _____
 - c.2)** Produce an output that is saved or formatted (e.g., file output, JSON, report) _____
 - c.3)** Demonstrate at least two test scenarios _____
 - c.4)** Explain how you verified correctness _____

- d)** Implement and demonstrate an agentic program that performs a multi-step task with constraints, tool use, and a human approval checkpoint. _____
 - d.1)** Agent receives a goal and breaks it into steps (plan or task list) _____
 - d.2)** Agent uses at least one tool (e.g., calculator, local data lookup, file read/write in a safe sandbox) _____
 - d.3)** Agent asks for explicit human approval before the final action (e.g., generating the final output file, sending a message draft, or applying changes) _____
 - d.4)** Agent logs decisions and includes a 'stop rule' when uncertain _____
 - d.5)** Explain how you defended against prompt injection or bad instructions _____

STEP 4 | REFLECT

INITIALS

- a) Explain what you learned about debugging, discipline, and responsibility when software affects other people, and describe one habit you will keep as you continue programming. _____
- b) Identify three programming-related career pathways and describe the education/training for one you might explore. _____

END OF REQUIREMENTS

BY SIGNING BELOW, I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT ALL REQUIREMENTS WERE MET AT OR ABOVE THE REQUIRED STANDARDS AS OUTLINED IN THE BADGE REQUIREMENTS CHECKLIST.

SKILL BADGE ADVISOR

DATE (YYYY-MM-DD)