

Study Design

Target Participants: Students have Python programming skills but have not learned the software development life cycle.

Step 1 – Introduction and Quiz (10 min)

- Obtain verbal consent from participants for the user study
- Collect demographics
- Administer a quiz to assess baseline knowledge of the software development process.
- Tutorial on how to use our system
 - Users can choose the phase from the home page
 - Both phases will have a chat window that allows user to communicate with agents. Develop phase will have an additional window to allow users to write/run/test the code.
- Clearly describe the task the user needs to complete
 - For the “Plan and Design phase”, the user needs to interact with the agents to come up with user stories, functional requirements, or non-functional requirements.
 - For the “Develop” phase, the senior developer agent will provide a feature that needs to be implemented from a user story, and the user needs to write Python code to implement it and ask the senior developer agent if the code is completed

Step 2 – Use DevCoach to complete the tasks (30min)

- Have participants use DevCoach to complete predetermined tasks that cover design and develop phases
- Data Collection for each phase
 - The deliverables
 - Task completion time
 - Interactions with the system(How many times the participant communicated with the agents)

Step 3 Post Interview Questions and Quiz (10 min)

- Administer a quiz to assess baseline knowledge of the software development process after learning with DevCoach
- Post survey questions:
 - 5-point Likert scale Questions:

- How would you rate the usability - how easy or difficult was it to navigate and use the system?
- How would you rate the effectiveness of the system to help you understand the different phases of the software development process?
- How would you rate the quality of the communication and feedback from the generative agents?
- How would you rate your overall learning experience with DevCoach?
- Did you encounter any challenges while using DevCoach to learn about the two phases of the Software Development Life Cycle?