HW6: Best Practices for Sprint Planning and Sprint Execution.

GitHub Repository Link: <https://github.com/ChiragBellara7/HW6_Sprint_Planning_and_Execution>

**Feature Breakdown and Time Estimates**

Feature A: Calculate Sprint Team's Velocity

* Subtask 1: Implement data structures to receive data (10 minutes)
* Subtask 2: Define method to calculate sum of points completed (5 minutes)
* Subtask 3: Implement logic to calculate the number of sprints (5 minutes)
* Subtask 4: Implement logic to calculate average velocity (10 minutes)
* Subtask 5: Display the output average velocity in correct format (5minutes)

Feature B: Calculate Team Effort-Hour Capacity

* Subtask 1: Define the method and format of input and what inputs are necessary (15 minutes)
* Subtask 2: Implement data structures to read inputs (10 minutes)
* Subtask 3: Implement suitable data structure to better define and modularize the inputs, especially in case of data for individual team members. (15 minutes).
* Subtask 4: Implement logic to calculate available working days per team member (15 minutes)
* Subtask 5: Implement logic to calculate total available hours per team member (20 minutes)
* Subtask 6: Implement logic to calculate team effort-hour capacity (10 minutes)
* Subtask 7: Display the output individual and team capacity (10 minutes)

**Parallel Subtasks**

* Feature A:

Subtask 2, 3 and 4 can be done in parallel. Though doing them sequentially would be the right way to do them, doing them in parallel is more efficient as testing them individually is far more difficult than testing the whole method i.e. all three subtasks together.

* Feature B:

Subtask 2 and Subtask 3 can be worked on in parallel as they deal with the same data. Reading the inputs and simultaneously processing them to modularly store in a data structure makes it easier to do the further processing.

Subtask 4, 5 and 6 can be done in parallel as they are independent operations. Though performed on the same data, they are different operations. Doing them in parallel makes it easier to test the final outcome and visualize what the actual total outcome will look like.

**Output and Screenshots**

Feature A – Calculate a sprint team’s velocity.

Input: Previous sprints point completion

Output: Average velocity

A screenshot of a computer

Description automatically generated

Feature B - Calculate Team Effort-Hour Capacity

Input: Number of Sprint Days, Team Member Details (Number of days or hours off e.g. using PTO, Number of days or hours committed to Sprint ceremonies, Number of Hours/Day available as a range)

Output: Available Effort-Hours/Person and Available Effort-Hours for Team

A screenshot of a computer program

Description automatically generated

**Burndown Charts**

A graph with blue lines

Description automatically generated

A graph with lines and numbers

Description automatically generated

**How could swarming have been used in this implementation?**

Swarming could have been applied in several ways during the implementation of this sprint planning tool:

1. Parallel Subtask Completion:

As identified earlier, some subtasks are independent and can be worked on concurrently. Swarming could involve assigning these tasks to different team members, allowing them to work simultaneously and potentially speeding up the development process.

**Example:** One team member could work on defining the calculateVelocity function (Feature A, Subtask 2, 3, 4) while another works on defining the output function for individual capacity (Feature B, Subtask 4, 5).

1. Code Review and Refactoring:

Once individual subtasks are complete, swarming could be used for code review and refactoring. This involves bringing multiple team members together to:

* + Review each other's code for potential issues like bugs, inefficiencies, or adherence to coding conventions.
  + Collectively brainstorm and implement improvements as needed.
  + Swarming in this scenario leverages the diverse perspectives and knowledge of different team members to identify potential issues and improve code quality.