

PROBLEM-2

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SOEN 6011: Software Engineering Processes

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Requirements

- Requirement 1

- **Identification:** FR1
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** High
- **Risk:** Low
- **Description:** The program shall accept an angle input from the user as a real number.
- **Rationale:** To enable computation of $\tan(x)$ based on user-provided angle value.
- **Difficulty:** Easy
- **Type:** Functional Requirement

- Requirement 2

- **Identification:** FR2
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** High
- **Risk:** Low
- **Description:** The program shall allow the user to specify the unit of the input angle as degrees or radians by entering 'd' or 'r'.
- **Rationale:** To let the user input the angle in their preferred unit and handle conversions appropriately.
- **Difficulty:** Easy
- **Type:** Functional Requirement

- Requirement 3

- **Identification:** FR3
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** Medium
- **Risk:** Low
- **Description:** The program shall convert the input angle from degrees to radians if the user specifies degrees.
- **Rationale:** Trigonometric functions in Java work with radians; hence conversion is necessary.
- **Difficulty:** Easy
- **Type:** Functional Requirement

- **Requirement 4**

- **Identification:** FR4
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** High
- **Risk:** Medium
- **Description:** The program shall compute $\tan(x)$ of the input angle and display the result.
- **Rationale:** To provide the main functionality of calculating tangent.
- **Difficulty:** Medium
- **Type:** Functional Requirement

- **Requirement 5**

- **Identification:** FR5
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** High
- **Risk:** Medium
- **Description:** The program shall detect and display an appropriate message if $\tan(x)$ is undefined.
- **Rationale:** To avoid displaying invalid or infinite results to the user.
- **Difficulty:** Medium
- **Type:** Functional Requirement

- **Requirement 6**

- **Identification:** FR6
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** Medium
- **Risk:** Low
- **Description:** The program shall display an error message if the unit specified is neither 'd' nor 'r'.
- **Rationale:** To guide the user to enter a valid unit and prevent incorrect behavior.
- **Difficulty:** Easy
- **Type:** Functional Requirement

- **Requirement 7**

- **Identification:** NFR1
- **Version Number:** 1.0.0
- **Owner:** Jayanth Apagundi
- **Stakeholder Priority:** Medium
- **Risk:** Low

- **Description:** The program shall display the result of the calculation within 1 second after the user enters valid input.
 - **Rationale:** To ensure good performance and user satisfaction by providing timely results.
 - **Difficulty:** Easy
 - **Type:** Non-Functional Requirement
- **Requirement 8**
- **Identification:** NFR2
 - **Version Number:** 1.0.0
 - **Owner:** Jayanth Apagundi
 - **Stakeholder Priority:** High
 - **Risk:** Low
 - **Description:** The program shall provide clear and understandable prompts and error messages to guide the user through the input process.
 - **Rationale:** To improve usability and reduce user errors by making the interface user-friendly.
 - **Difficulty:** Easy
 - **Type:** Non-Functional Requirement

Assumptions

- The user inputs a valid real number for the angle; no validation is done for non-numeric input.
- The user specifies the unit correctly as either 'd' (degrees) or 'r' (radians); any other input is treated as invalid.
- The calculator is operated in a console environment that supports standard input/output (e.g., terminal, command prompt).