

SOEN 6481

Software Requirement Specification

Summer 2019

Deliverable 2

Eternity: Numbers

Declaration

I have read and understood the Fairness Protocol and Communal Work Protocol, and agree to abide by the policies therein, without any exception under any circumstances, whatsoever.

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Problem 6 [70 marks]

USER STORIES

6.1 Display input

| | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_01 |
| Statement | As a user, I should be able to see the operators/operations on the display screen that I am entering so that I can modify the expression if needed. |
| Constraint | The display screen will show a total of 16 inputs of the expression at a time. |
| Acceptance Criteria | Given I want to get the sum of 2 & 3, I should be able to see the expression as 2+3, on the display screen before I click “=” for the result. |
| Priority | Must have |
| Estimate | 1 |

6.2 Modify input

| | |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_02 |
| Statement | As a user, I should be able to delete wrongly entered operators/operations so that I can correct the expression I want to calculate. |
| Constraint | The user must have to enter atleast one operator/operation to delete it. |
| Acceptance Criteria | 1. Given I have entered 1, 2, 3 (123). On pressing the backspace key, I should see 12 on the display screen. 2. Given I entered 5. On pressing the backspace key, I should see 0 on the display screen. |
| Priority | Must have |
| Estimate | 1 |

6.3 Accuracy

| | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_03 |
| Statement | As a user I want my calculator to calculate the value of “Pi” upto 15 decimal places (enough for any measurable experiment), so that I can use it to bring accuracy in my results |
| Constraint | |
| Acceptance Criteria | 1. Given I have clicked “ π ” key and then “=” , I should see 3.141592653589793 on the display screen |
| Priority | Must have |
| Estimate | 2 |

6.4 Precision

| | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_04 |
| Statement | As a user, I should be able to choose the value of “pi” upto desired number of decimal points depending on my calculation, to get the precise result. |
| Constraint | |
| Acceptance Criteria | <ol style="list-style-type: none">1. Given I have clicked “pi” , on clicking “D” key if I enter 2 , the pi in my calculation will have value upto 2 decimal places i.e. 3.14 , which will be enough for me to calculate the circumference of a circle.2. Minimum decimal value to be chosen must be 2 and maximum is 15.3. Even If I click 1, after clicking “D” key, the value of pi will be 3.14 and if I click 16 or greater answer will be 3.141592653589793 |
| Priority | Should have |
| Estimate | 2 |

6.5 Area Shortcut

| | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_05 |
| Statement | As a user, I should be able to directly calculate the area of a circle by just providing the value of radius as this is the most needed calculation in my field of work thus it will save me a lot of time. |
| Constraint | The value of Radius should be greater than zero. ($r > 0$) |
| Acceptance Criteria | 1. Given I have clicked “Area” key. I will now click 5 (radius) to get the result 78.5 ($3.14 * 5 * 5$) displayed on the screen 2. Given I have clicked “Area” key. Now on giving the value of radius as -5, the display screen will show “ERROR” . |
| Priority | Should have |
| Estimate | 2 |

6.6 Store Result

| | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_06 |
| Statement | As a user, I should be able to save the results of my calculation so that I can use it later. |
| Constraint | There must be atleast one entered value or computation done, after starting the calculator. |
| Acceptance Criteria | 1. Given I have calculated area of a circle with radius “5” , if I click “S” key, the result will be stored in calculator’s memory for later use and a message will be displayed “Result saved” with the memory displayed [5]. 2. Given that I have just turned on the calculator and the display screen shows “0” , on clicking “S” nothing is stored in the memory. |
| Priority | Should have |
| Estimate | 2 |

6.7 Clear Memory

| | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_07 |
| Statement | As a user, I should be able to delete all the saved results to have a fresh memory and delete the results that will not be needed anymore. |
| Constraint | There must be atleast one saved calculation in the memory. |
| Acceptance Criteria | 1. Given I have saved 5 (3+2), 6 (9-3) in my calculator memory. On clicking “MC” key, both the saved values will be deleted. |
| Priority | Should have |
| Estimate | 1 |

6.8 See Stored Results

| | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_08 |
| Statement | As a user, I should be able to see all my saved calculations so that I can decide which one to use. |
| Constraint | The user must have to save at least one computation in the saving list. |
| Acceptance Criteria | 1. Given I have saved $2+2=4$ and then $4-3=1$ by clicking “S” key after each computation. On clicking “H” key I should see 4, 1. 2. Given I have just started the calculator and no value is saved. On clicking “H” , “No value” will be displayed on the screen |
| Priority | Should have |
| Estimate | 1 |

6.9 Last Calculation

| | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_09 |
| Statement | As a user, I should be able to operate on the last calculated answer directly. |
| Constraint | The user must have calculated one expression |
| Acceptance Criteria | 1. Given I calculated $2+2=4$, if I click “Ans” key and then + 2 , the result displayed should be 6 ($4 + 2$) 2. Given I have not done any calculation, clicking “Ans” will do nothing. |
| Priority | Should have |
| Estimate | 1 |

6.10 iCloud

| | |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier | EN_10 |
| Statement | As a user, I should be able to upload my saved calculations in icloud, so that I can access them from anywhere, anytime. |
| Constraint | The user should have an icloud account. |
| Acceptance Criteria | Given I have done a calculation and saved it in the memory, on clicking “iC” , the saved result(s) is permanently stored in my icloud account. |
| Priority | Could have |
| Estimate | 3 |

Problem 7 [10 marks]**Traceability Matrix**

| Index | User Story Identifier | User Story Name | User Story Source |
|--------------|------------------------------|------------------------|-------------------------------------------------------------------------------------|
| 1 | EN_01 | Display input | Problem 5 UML Use Case Diagram [Use Case: Display Result] |
| 2 | EN_02 | Modify input | Problem 5 UML Use Case Diagram [Use Case: Edit Displayed Result] |
| 3 | EN_03 | Accuracy | Interview (Problem 2) |
| 4 | EN_04 | Precision | User Story EN_03 |
| 5 | EN_05 | Area Shortcut | Problem 1 |
| 6 | EN_06 | Store Result | Persona (Problem 3) |
| 7 | EN_07 | Clear Memory | User Story EN_06 |
| 8 | EN_08 | See Stored Results | Interview (Problem 2) |
| 9 | EN_09 | Last Calculation | https://www.online-calculator.com/ |
| 10 | EN_10 | iCloud | Interview (Problem 2) |

Glossary:

1. User Story: In software development and product management, a user story is an informal, natural language description of one or more features of a software system, often written from the perspective of an end user or user of a system.
2. Traceability Matrix: In software development, a traceability matrix is a document, usually in the form of a table, used to assist in determining the completeness of a relationship by correlating any two baselined documents using a many-to-many relationship comparison.

Repository Link:

<https://github.com/Bikram1907/SOEN-6481>

References:

1. P. Kamthan, summer 2019, “Project Description” , Department of Csc. & SE, Concordia University
2. P. Kamthan, summer 2019, “User Stories in Context” , Department of Csc. & SE, Concordia University.
3. “Four Function Calculator Requirement Specification”
http://www.mathcs.richmond.edu/~barnett/cs322/assignments/1999_fall/calculator_requirements.pdf
4. “Software Requirements Document: A Multi-Function Calculator” <http://www2.cs.uidaho.edu/~rinker/cs113/calculator.pdf>