**PROBLEM 2** **Himani Patel**
SOEN 6011 **40071101**
Function 9 : $f(x, y) = x^y$ Date: 12/07/2019

# 1 Assumptions

- User gives input for both X and Y value.
- X and Y input is always a real number.
- When X is negative number , Y is whole number.

# 2 Requirements

- ***ID*** : FR1
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 1
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : When user input value of x and y both are 0,the system shall display an error message stating that result is undefined.
  ***RATIONALE*** : In order to respond to the undesirable event of zero to the power of zero

- ***ID*** : FR2
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 1
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : When user input value of x is 0 and y is negative value,the system shall display an error message stating that result is undefined.
  ***RATIONALE*** : In order to respond to the undesirable event of divided by zero

- ***ID*** : FR3
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 2
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Easy
  ***DESCRIPTION*** : When user input value of x is 0 and y is positive number,the system shall display 0 as a result.
  ***RATIONALE*** : In order to respond to the desirable event of zero to the power of positive value.

- ***ID*** : FR4
  ***TYPE*** : Functional Requirement

***PRIORITY*** : 2
***VERSION*** : 1.0
***DIFFICULTY*** : Easy
***DESCRIPTION*** : When user input value of x is negative number and y is 0 ,the system shall display 1 as a result.
***RATIONALE*** : In order to respond to the desirable event of negative value to the power of zero.

- ***ID*** : FR5
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : When user input value of x is negative number and y is odd negative number,the system shall display any number from -1 inclusive to 0 exclusive as a result.
  ***RATIONALE*** : In order to respond to the desirable event of negative value to the power of odd negative value.

- ***ID*** : FR6
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Easy
  ***DESCRIPTION*** : When user input value of x is negative number and y is even negative number,the system shall display any number from 0 exclusive to 1 inclusive as a result.
  ***RATIONALE*** : In order to respond to the desirable event of negative value to the power of even negative value.

- ***ID*** : FR7
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 2
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : When user input value of x is negative number and y is odd positive number,the system shall display any number less than -1 inclusive as a result.
  ***RATIONALE*** : In order to respond to the desirable event of negative value to the power of odd positive value.

- ***ID*** : FR8
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 2
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : When user input value of x is negative number and y is even positive number,the system shall display any positive number as a result.

***RATIONALE*** : In order to respond to the desirable event of negative value to the power of even positive value.

- ***ID*** : FR9
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 2
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Easy
  ***DESCRIPTION*** : When user input value of x is positive number and y is 0 ,the system shall display 1 as a result.
  ***RATIONALE*** : In order to respond to the desirable event of positive value to the power of zero.

- ***ID*** : FR10
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Easy
  ***DESCRIPTION*** : When user input value of x is positive number and y is negative number ,the system shall display any number from 0 to 1 inclusive as a result.
  ***RATIONALE*** : In order to respond to the desirable event of positive value to the power of negative value.

- ***ID*** : FR11
  ***TYPE*** : Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Easy
  ***DESCRIPTION*** : When user input value of x and y both are positive number ,the system shall display any positive number as a result.
  ***RATIONALE*** : In order to respond to the desirable event of positive value to the power of positive value.

- ***ID*** : NFR1
  ***TYPE*** : Non-Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Nominal
  ***DESCRIPTION*** : The system shall display the result within 3 seconds.
  ***RATIONALE*** : In order to achieve an efficiency of the system through response time.

- ***ID*** : NFR2
  ***TYPE*** : Non-Functional Requirement
  ***PRIORITY*** : 3
  ***VERSION*** : 1.0

***DIFFICULTY*** : Easy
***DESCRIPTION*** : The system shall display the helpful error messages in response to the undesirable events.
***RATIONALE*** : In order to achieve a robustness of the system.

- ***ID*** : NFR3
  ***TYPE*** : Non-Functional Requirement
  ***PRIORITY*** : 4
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Difficult
  ***DESCRIPTION*** : The system shall display the result value to ten digits accuracy.
  ***RATIONALE*** : In order to achieve a number formatting and an accuracy of the system.

- ***ID*** : NFR4
  ***TYPE*** : Non-Functional Requirement
  ***PRIORITY*** : 4
  ***VERSION*** : 1.0
  ***DIFFICULTY*** : Difficult
  ***DESCRIPTION*** : When the system is refreshed , The system shall provide consistent graphical user interface or the textual user interface.
  ***RATIONALE*** : In order to achieve a number formatting and an accuracy of the system.

## References


[1] ISO/IEC/IEEE International Standard 29148
`https://ieeexplore.ieee.org/servlet/opac?punumber=8559684`

[2] Four Function Calculator Requirement Specification
`http://www.mathcs.richmond.edu/~barnett/cs322/assignments/1999_fall/calculator_requirements.pdf`

[3] Software Requirements Document of a Multi-Function Calculator
`http://www2.cs.uidaho.edu/~rinker/cs113/calculator.pdf`

[4] Software Requirements Specification (SRS) Template
`https://www.uccs.edu/Documents/tboult/srs.doc`