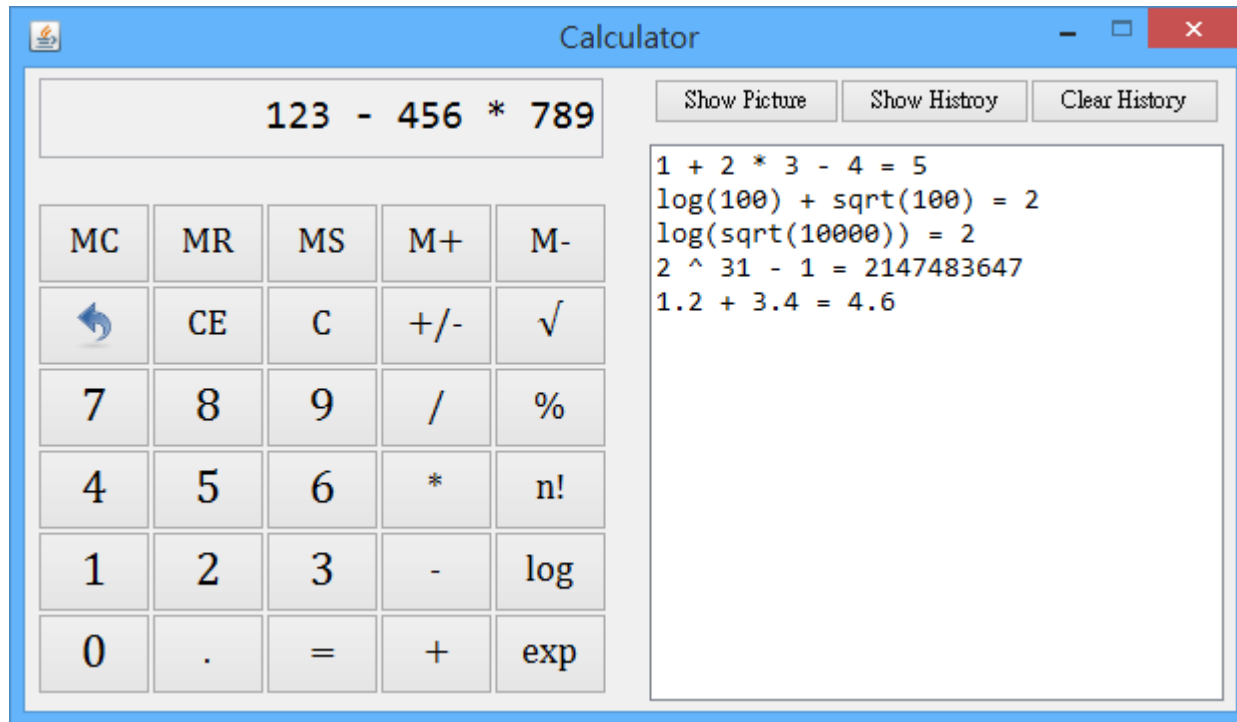# Homework 9

Deadline: 2015/06/21 23:00

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- Design a Swing GUI calculator that can calculate some values of type `double` with the following functions (buttons):

  - Unary operations:
    - **Square root**($\sqrt{}$) (ex: sqrt(100)=10)
    - **Factorial**(n!) (ex: fact(5)=120)
    - **Logarithm**(log) (ex: log(100)=2)

  - Binary operations:
    - **Addition**(+), **Subtraction**(-), **Multiplication**(*), **Division**(/), **Remainder**(%)
      - All the operators have the same precedence (i.e. calculate the result from left to right).
    - **Exponent**(x^y) (ex: 5^2=25)

  - Memory functions:
    - **M+ / M-**: Adds (or subtracts) the current value to (or from) the stored value in the memory.
    - **MS**: Stores the current value to the memory.
    - **MR**: Recalls the stored value in the memory.
    - **MC**: Clears the stored value in the memory (i.e. sets the value to 0).

- Clearing functions:
  - **C**: Clears the entire calculation.
  - **CE**: Clears the current entry.
- Other functions:
  - **+/-**: Invert the sign of the current value.
  - ←: Delete a digit from the current value.

- You should use `GridLayout` to arrange the functional buttons above and the numerical buttons (0-9).

- Use a `JTextField` or any other Swing GUI component to show the calculating result.

- There is a history list that stores the calculations done before. You can use a button to show the history in a `JTextArea` which is inside a `JScrollPane` (*P*). You can also clear the history list with another button.

- Add a button that an image will show in *P* when the button is pressed. The history list and the image cannot appear at the same time.

Sample Layout

Just for reference. You need not to follow this layout exactly.

Scoring Criteria

- This homework counts for 4% of the semester grade
- Please see the attached document "Scoring Criteria and Usage Scenario.pdf" for details
- Plagiarism is strictly forbidden

Submission

- Please pack your **source code** and all related files (images etc.) to a **.zip** file and upload it to Moodle. You can also upload the whole eclipse project.

- Please give a brief explanation of how to run your program. (e.g. put the image files to where…etc.)

- The file name should be `{STUDENT_ID}_hw9.zip`

- Deadline: 2015/06/21 23:00

- No late submission is accepted

If you have any problem about this homework,
please email to: thanatos1710@gmail.com（沈士閎）