40071296 - DELIVERABLE2

A PREPRINT

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SOEN 6011
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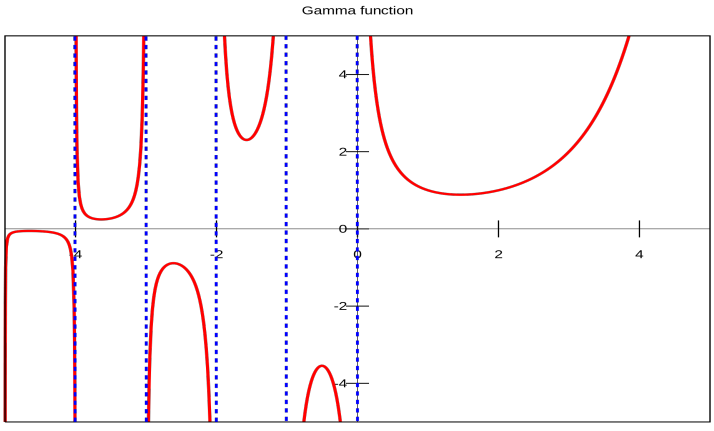
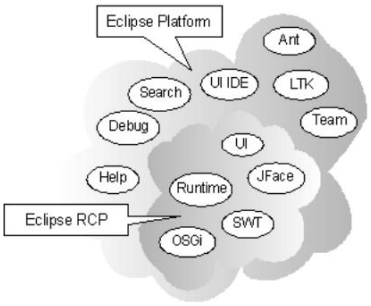
$$\Gamma(z) = \int_0^{\infty} e^{-t} t^{z-1} dt$$





DEBUGGER

Advantages and Disadvantages.

The Eclipse Platform is designed for building (IDEs) integrated development environments, and arbitrary tools. The Eclipse Platform UI is built around a workbench that includes menu and tool bar actions for running and debugging arbitrary programs, and provides a generic debug perspective better suited to that task.

ADVANTAGES:-

- When a Java program is launched in debug mode, a debug view shows the processes, threads, and stack frames.
- During single stepping, the debugger instructs the editor which source code line to highlight. Debug-specific views show the list of breakpoints, the values of variables, and the fields of objects. Breakpoints are represented by a special type of marker.
- It don't require several recompiles for what might be a small problem and often allow debugger-time altering of the variables, which might be handy as well.

DISADVANTAGES:-

- Sometimes Eclipse can get into a bad state and one have to clear the caches and restart or go through elaborate build-clean-build processes to fix it.
- Eclipse run very slowly.

QUALITY ATTRIBUTES

CORRECTNESS:-

Below are some of the important rules for effective programming which are consequences of the program correctness theory.

- Defining the problem completely :-
  I precisely described my function in Deliverable 1 along with its requirements.
- Develop the algorithm and then the program logic :-
  I mentioned two algorithms named Striling and Lanczos in Deliverable 1 and than used Lanczos for code implementation and it is giving accurate results.
- Developers should pay attention to the clarity and simplicity of your program :-
  Program is very clean and easy to understand as all sub-functions which are needed to implement Gamma function are coded as separate functions rather than putting everything in main function.

Types of correctness:-

- Semantic Correctness:- I tried to use as much as i can the Variable names suitable to task or function performed by the code.
- Syntactic Correctness:- I coded my program adherent to java code rules.

EFFICIENCY:-

It tests the amount of resources required by a program to perform a

specific function.

My program is quite efficient as all functional requirements and resources it needs to run are available itself in code as sub-functions.

MAINTAINABLE:-

Maintainability is defined as the degree to which a source code is understood, repaired, or enhanced.

My code is not fully based on main function, it is divide into sub-functions so in case one needs to make changes in code its esay to understand and make without modifying main function. Moreover, i have provided comments inline with code which increase the understand ability of code for readers.

ROBUST:-

Robustness is the ability of a computer system to cope with errors during execution and cope with erroneous input.

My program has support for error handling, exceptions are thrown to handle errors.

USABLE:-

In software engineering, usability is the degree to which a software can be used by specified consumers to achieve quantified objectives with effectiveness, efficiency, and satisfaction in a quantified context of use.

I have used textual interface for running my code. Its very easy, at run time it will show you message stating "Enter number to compute gamma function" and gives you result in less than 1 minute. It is very eay to use and very effective and fast.

CHECKSTYLE

Advantages and Disadvantages.

Checkstyle is a development tool to help programmers write Java code that adheres to a coding standard. It automates the process of checking Java code to spare humans of this boring (but important) task. This makes it ideal for projects that want to enforce a coding standard.

ADVANTAGES:-

- Check many aspects of your source code such as it can find class design problems, method design problems.
- It has the ability to check code layout and formatting issues.
- Checks that the parts of a class or interface declaration appear in the order suggested by the Code Conventions for the Java Programming Language.

DISADVANTAGES:-

- Java code should be written with ASCII characters only, no UTF-8 support.
- To get valid violations, code have to be compilable, in other case you can get not easy to understand parse errors.
- You cannot determine the full inheritance hierarchy of type.
- You cannot see the content of other files. All files are processed one by one.

MAPPING OF REQUIREMENTS WITH TEST CASES

Requirements Identifier	**Test Cases**
FR1	testX()
FR3	testSin()
FR4	testPow(), testLog(), testFracPower()
FR5	testFactorial()
FR6	testExp()

References

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