

Summary of the project – Operating Systems

Software Engineering issues while designing and implementation:

The first issue I've faced while designing is the design itself. I have spent a lot of time thinking about the design. I thought of two designs. Writing all the classes in a single java file and writing them separately.

Finally, I came up with writing separate java file for each class.

The issues I've faced while implementing is the conversion of numbers into binary and the conversion of negative numbers into binary because of java inbuilt conversion to the 32-bit 2's complement. But our given program is to be implemented everything in 16 bit. Hence it became a great problem while performing the arithmetic operations.

General Approach to the problem:

I first created the SYSTEM class which is the driver class for all the other classes. To load the contents to the LOADER class, I read the input file correspondingly assigned all the input values to the respective variables which I can use in future. I came up with a Pseudo code for the problem that has all the classes, the methods and the operations involved in each class. When it comes to CPU class, fetching, decoding and executing the opcodes is done and a flow chart was used for the given example instructions. The errors are checked during the flow and are kept I ERROR_HANDLER class.

List of utilities:

I wrote everything in eclipse IDE which has inbuilt debugger that helped me in debugging the errors.

Bulk complexities:

The project has over 1000 lines of code. In that, there are 40-50 lines of comment lines that are written at the start of methods and blocks.

There are totally 10 methods and around 30 decisions.

There are around 25 declarations of various types of variables and methods.

Approximate break down of time:

Design – 20 hours

Coding – 40 hours

Debugging – 10 hours

Choice of programming language used:

I used java which is an Object Oriented Programming language in developing the project. It helped me well in designing process because of its object oriented nature. The inbuilt methods of java helped me with the conversions from Binary to Decimal, Hex and vice-versa. Also my strong previous knowledge of java development made me choose this language in designing and developing the project.