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CLASS :- BTECH 4TH YEAR

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Date
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Software Engineering
Tutorial 8

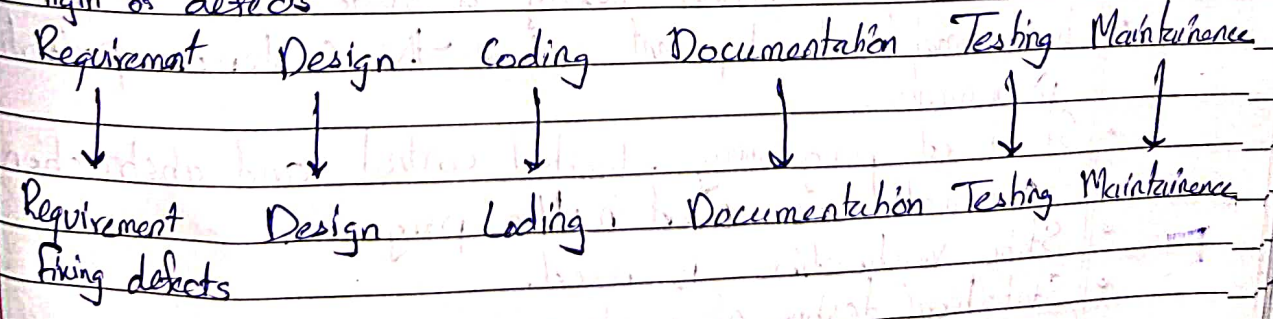
Ans 1:

Fault Class	Comments
Data Faults	• Possibility of buffer overflow while getting file_name input. • Nullable file pointer fptr. • Uninitialised start, end clock_t • Possible character input in integer data type while reading file. • Insufficient array space a. • Unnecessary array fArray • ~~Possibility of~~
Control fault	• Redundant processes in sorted_file method.
Input/Output fault	Verified. No fault found.
Interface fault	Verified. No fault found.
Storage Management faults	• Array size insufficient and static. May not work in low space RAM machines.
Exceptions	• No exception handled. • Possible Segmentation faults in reading file input, null file path.

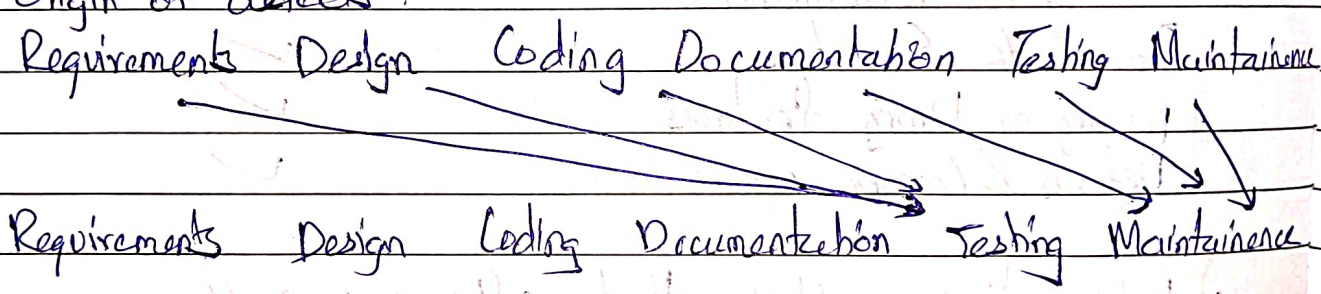
Some of the bugs that can be identified in Software testing and Software Inspection are as follows:-

	Inspection	Testing
Interface defects at module level	✓	X
Code Complexity	✓	X
Additional features	✓	X
Product Usability features	X	✓
Errors of Performance	✓	✓
Poor Code Structure	✓	X
Missing or Wrong features	✓	✓
Defects & Corner cases	✓	✓

i) Below diagram shows that software inspection and testing not only saves our time but also saves product from all problems. When inspections are incorporated and applied, defects of stage are identified at the same stage and can be either removed or fixed at the same stage.



ii) The below diagram shows a scenario where only software testing is used. The bugs and problems in all stages remain unidentified until the testing phase. This makes fixing the bugs very difficult and cumbersome. Even, identification of the root cause of the bug makes it quite strenuous. The bugs are only discovered and fixed when reported in testing and maintainence.



Ans 3) The software development process of 'cleanroom software development is based on the philosophy of defect avoidance rather than defect removal.
Some of its characteristics are:-

- Formal specification using a state transition model.
- Incremental development where the customer prioritises increments.
- Structured programming - limited control and abstraction constructs are used in the program.
- Static verification is used.
- Statistical testing of system.