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Analyzing the Profile of a Software Developer for Testing Mission-Critical Software

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ABSTRACT :

In today's hyper connected world, the concept of mission critical has assumed tremendous importance. This is due to the fact that any lapse in the mission critical projects or software has a disastrous impact in terms of the cost, time and the loss of reputation to the country or the organization which was working in the mission critical projects.

On account of the importance of the criticality of the project, certain basic qualities are required for the software professionals who are keen to work in the mission critical software development projects.

This article deals with the qualities or the attributes which must be invariably present in the software developers so as to ensure that mission critical software development projects are a success.

Introduction

In today's interconnected hyper competitive AI world, the importance of mission critical software development projects has assumed a great importance. Before we dwell further, let us take few examples to illustrate the concept of the failure of mission critical software development projects

"... we all know astronaut Sunita Willaims. She was sent to space for a week long stay and to perform some mission critical research during her stay in the international space station. However, her stay got extended to nine months. *This was due to the failure of the software in the space station.* The ordinary project got converted into *mission critical project* as she was able to return to earth after several unsuccessful attempts to fix the software. Finally when the software engineers were able to identify the fault and take corrective actions then she was able to return to earth. Here it is to be noted that the mission criticality *was to bring her back to earth quickly or else all future space endeavors were be put on hold*"

Taking another example and that too of an astronaut.

".. Kalpana Chawla to was sent into space and while returning to earth, the failure of the mission critical software led the entire space craft to burst into flames killing the entire crew.... In this case the mission critical software failed miserably..."

The above two examples clearly demonstrate the importance of mission critical software. Thus, the software developer who are required to work in mission critical software projects must have certain qualities.

Qualities of software developers working in mission critical projects

- a) Mission critical software development projects are interconnected. The mission critical software development projects do not function alone. They are developed with multiple interfaces and multiple inter connected units. These projects have several project managers. Thus, to work in a mission critical software project, the developers must know the entire system architecture with the deep and sound knowledge of the entity in which they are working
- b) Ability to brainstorm the various implications of the interacting units at various phases of the cycle. This means that the developers must understand the environment in which the entity or the object will function when it is stationary and when it is moving. For example, when the spaceship moves, the developers must have the various parameters at each of the position of the movement of the spaceship including the speed, the outside temperature and the height at which the spaceship is operating

- c) In depth knowledge of the code being used for developing the mission critical software. The developers must have in depth knowledge of the programming and the code which is being used to develop the software
- d) In depth knowledge of n dimensional space and statistics, physics, and other scientific fields which directly or indirectly impact the working of the mission critical software specially in the case of space ships
- e) The ability to read the data. In some of the mission critical projects, the developers must have the ability to read the continuously changing data and to take the corrective and preventive actions accordingly. This is specially needed in the life saving mission critical projects such as the person who is struggling to survive the heat attack as it is a do or die situation.
- f) The ability to take risks. This is another vital aspect of the software developers. They must take risks and learn from those risks
- g) A mind which is open to new ideas and suggestions. This is the quality which every developer connected to mission critical projects must have. An open mind is receptive to new ideas and new insights and is thus able to look at the problems from new perspective

Conclusion

In the mission critical projects, software developers have a key role to play. This necessitates the need to have certain specific qualities and these qualities must be demonstrated while working in the projects. In the absence of the application of these qualities the mission stands to loose out.