Week 8 Research Essay

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**Abstract**

 Since the establishment of the computers, the software companies are searching for methods which can help them in the development process of software products. In the 1980s, researchers focused on finding techniques for the software developers which can automate their tasks. Many researchers claimed that CASE tools are the future of software development and will perform all the tasks of the software developers automatically. However, CASE tools can’t perform all these tasks of the software developers but provide a combination of tools which can help software developers in the development of the software products.

 CASE tools are necessary for every organization with the change in the processes and technology over time. There are different packages which are provided by CASE tools for the software development companies to assist them in the development of software. However, there are still many companies which are not aware of the CASE tools and their need for UML modeling and object-oriented concepts. Many researchers found that CASE tools are necessary for every organization these days who want to solve problems which they are facing in the development of software products.

This paper will present how different CASE tools can be utilized in the development of software products. Different categories of CASE tools are discussed in this paper and explained how these CASE tools categories allow the companies to automate their development tasks. The main goal of this paper is to provide assistance to the software companies that how to perform complex tasks during the development of the software products and how to perform different tasks which are necessary in the development of the software products with the help of CASE tools.

**Introduction**

 Computer-aided software engineering (CASE) tools are used to provide assistance for the design and development of software. The aim of CASE tools is to reduce the time and cost of the development of software and enhance the quality of the software products. CASE tools help in increasing the productivity, improving the quality of software product, and maintenance of the software product. CASE tools assist the developers throughout the different stages of the development process. Computer-aided software engineering (CASE) include many different products which are having different functionalities.

The CASE tools are categorized into three levels which include upper level, lower level, and integrated level. The upper CASE tools are used in planning, designing and analysis phase of the software development, the lower CASE tools are used during the coding phase of the software development and Integrated CASE tools including all the phases which are essential for the development of the software products such as planning, designing, analysis, coding & testing, and maintenance. There are different CASE tools which include diagrams tools, documentation tools, analysis tools, process modeling tools, and design tools. All these CASE tools provide various functionality for the developers to assist them during the development of software products. However, many developers are unaware of the feature of CASE tools; that is why these tools are being sparsely used in many enterprises.

**Discussion**

 CASE tools provide step by step methodology for the development of software products. There are different CASE tools which can be used in designing the process of software development. In designing phase, developers required CASE tools which assist them in creating diagrams and process models for the development of software. There are different diagramming and process model tools which provide assistance to the developers in creating a graphical representation of the data and system processes (Zheng et al., 2017).

Microsoft Visio is one of the most popular CASE tools for creating different diagrams and process models such as UML diagrams, flowcharts, use case diagrams, sequence diagrams, activity diagrams, DFDs, etc. (Zheng et al., 2017). These diagrams are essential because they allow in modifying the software as per the requirement of the software product. Designing tools allow developers to create the block structure of the software and describe about the modules one by one which is used in the software product. These tools help in providing the detail of each module and the connection of each module with each other.

There are different analysis tools which are also essential for the development of software products. Analysis tools help developers to find out the requirements of the users. These tools automatically check for any inaccuracy or inconsistency in the current model of the software. The Visible analyst is one of the most popular analysis tools which is used for complete analysis of the software model. It is an integrated strategic planning and data modeling tool for analyzing the software models during the development of the software product (Osman & Chaudron, 2018).

 Coding CASE tools are as important as designing and analysis tools for the development of software. Coding tools consist of libraries and simulation tools which are used for testing and debugging of the software. There are different tools for coding which include Eclipse, Net beans, Microsoft visual studio, android studio, etc. These tools consist of programming environments such as IDE which provide assistance during the coding process of the software development. Testing and debugging is very important for the development of the software. It is the process of finding errors in the code and then fixing those errors. Testing and debugging helps the developers in fixing errors easily in the complex code (Osman & Chaudron, 2018).

Software maintenance and quality assurance are also very important because it allows the developers to include modifications in the software product after the development of the final product, and increase the overall quality and performance of the software product. The most important factor in the development of the software is to provide the quality to end users as per organization standards. Similarly, maintenance is also very important because bugs can stop the functionality of the software at any time. Maintenance allows to fix those bugs and ensure the stability of the software product (Osman & Chaudron, 2018). There are different quality assurance tools which include J meter, load runner, selenium, etc.

 The above described is the different CASE tools and how they can be used in different processes of software development. It is very important to find the requirements of the software product before selecting a CASE tool because different CASE tools provide different functionalities for the developers. However, documentation and diagrams are an essential need for every software developer because they help in making relationships between different software components (Orlikowski, 1993). CASE tools are not only used for the development of the software products but also being used for database designing. They can provide many functions in database design which include designing a database, creating diagrams like schema’s, ERD, relationship diagrams, etc., generating reports and implementing a database.

**Conclusion**

 Software engineers are searching for finding solutions to find architectural glitches and other problems during the development of software products. There are many software development companies which are looking for ways which can help them in automating the software development process. However, they are still not aware of the CASE tools which are the solution for their problems. CASE tools provide different tools for the developers which can automate the software development process. Different Case tools allow companies to create a proper structure for the development of the software and perform tasks step by step knowing the requirements of the users. It is really important for software development companies to utilize CASE tools to compete in the market.

**References**

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