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## A study on frequently used utility features of integrated development environments by programmers

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An Integrated Development Environment (IDE) is a software suite that brings together the essential utility features for computer programming. Even though several previous studies had been conducted by reputable scholars by elaborating the fundamental characteristics of IDEs for different programming languages, the particular discipline lacked an understanding of frequently used individual utility features provided with different IDEs. Therefore, this study was conducted with the intention of identifying frequently used utility features of IDEs by software developers to provide a comprehensive illustration for future studies on finding the impact of utility features on the programming skills of software developers. The top seven IDEs according to the market share were considered for the study. A deep systematic literature review was conducted to identify the most frequently used IDE utility features and their characteristics in terms of modern IDEs. In addition to that, twelve senior software professionals of the well-established software companies were interviewed to have a thorough conceptualization and validation according to the industry experiences. According to the findings of the study, Autocompletion, Error detection and Quick Fixes, Refactoring, Version Controlling, Debugging, Keyword Search, Go to Definition and Explorer were identified as the most frequently used utility features of integrated development environments by programmers. All these utility features increased the efficiency and productivity of programming tasks while creating a hidden cost in terms of using these IDE utility features. This opens a study area to research the impact of using IDE utility features on the programming skills of software developers.

**Keywords:** Integrated development environment, IDE, Utility features of IDE, Frequently used IDE features

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