Suitability of Black Box Approaches for the Reliability Assessment of Component-Based Software

Authors : Anjushi Verma, Tirthankar Gayen

Abstract : Although, reliability is an important attribute of quality, especially for mission critical systems, yet, there does not exist any versatile model even today for the reliability assessment of component-based software. The existing Black Box models are found to make various assumptions which may not always be realistic and may be quite contrary to the actual behaviour of software. They focus on observing the manner in which the system behaves without considering the structure of the system, the components composing the system, their interconnections, dependencies, usage frequencies, etc.As a result, the entropy (uncertainty) in assessment using these models is much high.Though, there are some models based on operation profile yet sometimes it becomes extremely difficult to obtain the exact operation profile concerned with a given operation. This paper discusses the drawbacks, deficiencies and limitations of Black Box approaches from the perspective of various authors and finally proposes a conceptual model for the reliability assessment of software.