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Verification and Validation

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ASSIGNMENT

Q. What is Z specification, why it is use for, also give Example.

ANSWER:

Z Specification:

Z Specification is a formal specification language used for describing and modeling computing systems based on the standard mathematical notation used in axiomatic set theory, lambda calculus and first-order predicate logic. With the ever-increasing complexity of computer systems, reliable and effective, design and development of high quality systems that satisfy their

requirements is extremely important. In the mission and safety critical system failure can cause cost overrun, loss of lives or even severe economic consequences can arise.

So, in such situations, it is necessary that errors are uncovered before software is put into operation. These challenges call for acceptance of proper engineering methods and tools and have motivated the use of formal methods in software engineering.

There are varieties of formal specification languages available to fulfill this goal and one way to achieve this goal is by using Z formal specification language. Z is model

oriented formal method. based on set theory and first order predicate calculus.

Usage and notation:

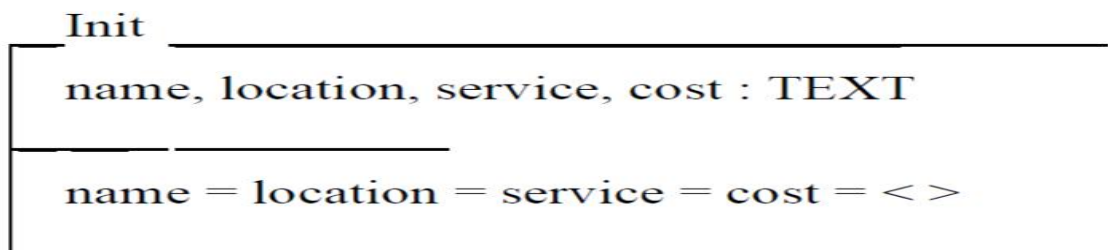
Z is based on the standard mathematical notation used in axiomatic set theory, lambda calculus, and first-order predicate logic. All expressions in Z notation are typed, thereby avoiding some of the paradoxes of naive set theory. Z contains a standardized catalog (called the *mathematical toolkit*) of commonly used mathematical functions and predicates, defined using Z itself.

Although Z notation (just like the APL language, long before it) uses many non-ASCII symbols, the specification includes suggestions for rendering the Z notation symbols in ASCII and in LaTeX. There are also Unicode encodings for all standard Z symbols.

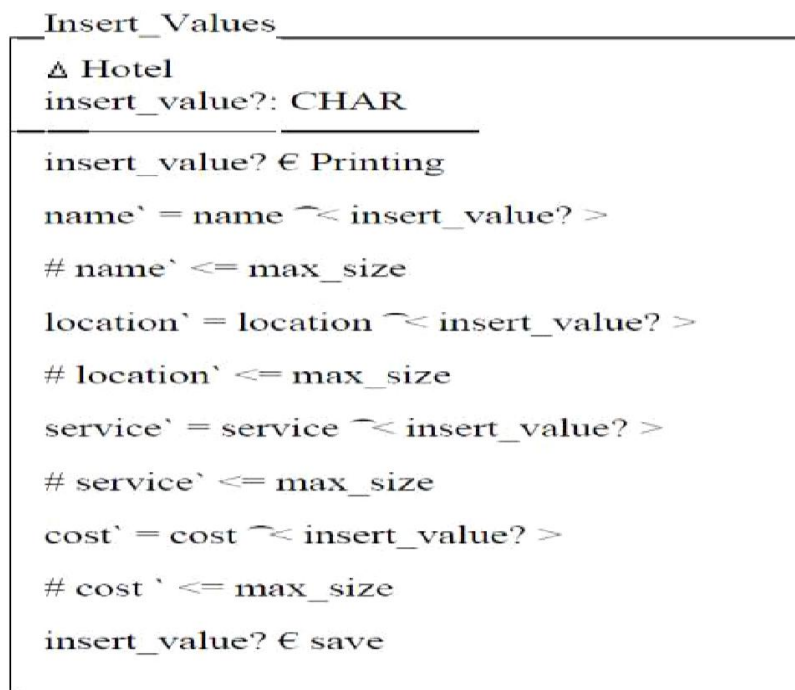
Example: Making an app Showing the location of the hotels and their services and the service related cost on mobile screen.

HOTEL.

>VARIABLE INITIALIZATION:



>Insert values



>Display Hotel interface

Hotel_View

\exists Hotel

name, location, service, cost, name', location', service', cost' : TEXT

Display! : \mathbb{P} TEXT

Display! = (name' = name \wedge location' = location \wedge service' = service \wedge cost' = cost)

THE END