Assignment # 02: Software verification and Validation

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Software verification and validation

Q:-What is Z specification, why it is use for, also give Example?

Ans:- **Z specification:- "**Describe the behavior of system in the language o f modern mathematics**".**

the Z specification used for describing and modeling computer systems. It is targeted at the clear specification of computer program and computer based systems in general.

Z contains a standardized catalogue (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.

➔WHY Z specication:-

Following are the main reason why we used Z specification:

>expressive power.

>precise formalism.

>can be used to model a broad range of system.

>Accuracy important for safety-critical systems.

➔**Example:-**

Banking system:

WithdrawMoney

BankAccount---------->BankAccount'

Dollars : N	Dollars' : N
Cent: N	Cent' : N
Dollars ≥ 0	Dollars' ≥ 0
Cent ≥ 0	Cent' ≥ 0

△BankAccount

Dollarmount? : N

centAmount? : N

dollarAmount? ≤dollars

DollarAmount? = dollar ==>centAmount? ≤ cents

centAmount? > cents

⇨ (dollars' = dollars - dollarAmount? – 1
^ cents' = cents - centAmount> + 100)

centAmount? ≤ cents

==>(dollars' = dollars - dollarAmount?

^ cents' = cents - centAmount?)