*ASSIGNMENT*

*SOFTWARE VERIFICATION AND VALIDATION*

*TO SIR ZAIN SHAUKAT*

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## Q.1:- What is Z specification, why it is use for, also give Example

### Ans:-

The Z notation /ˈzɛd/ is a formal specification language used for describing and modelling computing systems. It is targeted at the clear specification of computer programs and computer-based systems in general. 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 catalogue of commonly used mathematical functions and predicates, defined using Z itself. Z is a model oriented formal specification language based on ZermeloFränkel axiomatic set theory and first order predicate logic. It is a mathematical specification language, with the help of which natural language requirements can be converted into mathematical form. 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**

## Add and lookup operations

Add_Error
$\Xi$ **DataDictionary**
**entry?: DataDictionaryEntry**
**error!: seq char**

**entry?.name $\in$ dom ddict**
**error! = "Name already in dictionary"**

Lookup_Error
$\Xi$ **DataDictionary**
**name?: NAME**
**error!: seq char**

**name? $\notin$ dom ddict**
**error! = "Name not in dictionary"**