

# Avatar Zen Ladders

by Sven Nilsen, 2021

*In this paper I introduce a list of sets which satisfy Zen language levels.*

In the paper “Zen Languages”<sup>[1]</sup>, I introduced a simple domain specific language that resembles the philosophy of Zen<sup>[2]</sup>. However, this definition does not allow a formal mathematical object. In order to support formal mathematical objects one needs something which satisfies Zen language levels.

An Avatar Zen Ladder is a list of sets of the following property:

$$\text{azl}(s : \text{set}, x : [\text{set}]) = \forall i \text{ len}(x)-1 \{ x[i+1] \in x[i] \} \wedge (x[0] \in \text{pow}^{\text{len}(x)}(s))$$

$$x : [\text{azl}(s)] \text{ true} \quad \text{`x` is an Avatar Zen Ladder of `s`}$$

Here, `pow` is the power set operator<sup>[3]</sup>.

The name `azl` is an abbreviation for `avatar\_zen\_ladder`.

Avatar Zen Ladders satisfy Zen language levels and makes them more intuitive. The length of the list is the Zen level and the list is a sequence of sets where each successor is a member of the predecessor.

The name “avatar” comes from Avatar Extensions<sup>[4]</sup>, due to the wrapping of successive sets.

The name “ladder” comes from the story of Jacob’s ladder<sup>[5]</sup>.

The set `s` is used to generate a higher power set which functions as a “context”.

Since the higher power set takes up a lot of space, one can use `s` instead, for reasoning about it.

## References:

- [1] “Zen Languages”  
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