Jumpdest Validity

Notation : `function jumpdest_valid`

Description : This function determines the *set* of valid jump destinations given the code being run. This counts toward any position in the EVM code occupied by a JUMPDEST instruction. All of such positions in EVM code need to be on valid instruction boundaries, that is, not in the data portion of a PUSH operation, and not in any trailing PUSH operations.

Formally:

$$D(\mathbf{c}) \equiv D_J(\mathbf{c}, 0) \tag{1}$$

where:

$$D_J(\mathbf{c}, i) \equiv \begin{cases} \{\} & \text{if} \quad i \geqslant |\mathbf{c}| \\ \{i\} \cup D_J(\mathbf{c}, N(i, \mathbf{c}[i])) & \text{if} \quad \mathbf{c}[i] = \text{JUMPDEST} \\ D_J(\mathbf{c}, N(i, \mathbf{c}[i])) & \text{otherwise} \end{cases} \tag{2}$$

where N is the next valid instruction position in the code, skipping the data of a PUSH instruction, if any:

$$N(i, w) \equiv \begin{cases} i + w - \text{PUSH1} + 2 & \text{if} \quad w \in [\text{PUSH1}, \text{PUSH32}] \\ i + 1 & \text{otherwise} \end{cases} \tag{3}$$