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The Denotational Semantics of A Pre-Woven Language

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Abstract: Denotational semantics is an approach for giving a mathematical meaning to programming languages and systems. It gives the language designers a tool for high level abstract definitions. In aspect oriented programming, advice is weaved in designated locations of an underlying program specified by a pointcut expression. It is the job of the language implementer to specify how weaved code gets to be inserted into the proper location. Current denotational semantics of languages do not have the necessary constructs for accepting this weaved code. In this paper, we present a denotational semantics formal description that embodies the representation of constructs to be woven by some aspect. It illustrates the a formal description of the mechanism of where and how woven advice is inserted. The semantics presented are intended to be a general baseline for the use of any advice in any random joinpoint.