by the five places labeled with 0¢, 5¢, 10¢, 15¢, and 20¢, and transformations from one state to another state are shown by transitions labeled with input conditions, such as "deposit 5¢." The initial state is indicated by initially putting a token in the place p_1, with a 0¢ label in this example. Note that each transition in this net has exactly one incoming arc and exactly one outgoing arc. The subclass of Petri nets with this property is known as state machines. Any finite state machine (or its state diagram) can be modeled with a state machine. The structure of the place p_1 having two (or more) output transitions t_1 and t_2, as shown in Fig. 2.2, is referred to as a conflict, decision or choice, depending on applications. State machines allow the representation of decisions, but not the synchronization of parallel activities.

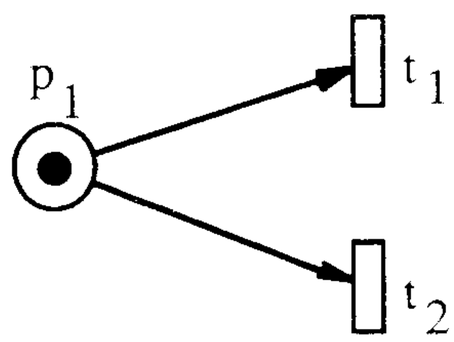

Fig. 2.2. A Petri-net structure called a conflict, choice, or decision. It is a structure exhibiting nondeterminism.

Exercise 2.1 Find Petri net (state machine) models of the two structured programming constructs, "if-then-else" and "do-while".

Answer: See the figures shown below in Fig.2.3.