

In this thesis we consider one of the weaknesses of temporal logic – the fact that the temporal formulas specifying complex properties are hard to read. We introduce new temporal logic “BP-CTL”, that originate from Computational Tree Logic (CTL) extended with operators partly taken from Behavior Protocols (BP) and partly newly defined. Text of the thesis is divided into several parts. First we introduce reader to the context of the issue. Next we describe new operators and show their usage on small examples. Then we formally define the resulting language (BP-CTL). In the next part we demonstrate the usability of BP-CTL and introduce the tool – called `bpctl` – for checking properties written in BP-CTL. Finally we evaluate and conclude our work. The text is extended with appendixes including detailed description of used formalisms, mapping tables of patterns collected in Property Specification Patterns project for BP-CTL and `bpctl` user manual.