JOURNAL OF FORMALIZED MATHEMATICS
Volume 11, Released 1999, Published 2003
Inst. of Computer Science, Univ. of Białystok

Predicate Calculus for Boolean Valued Functions. Part IV

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Summary. In this paper, we proved some elementary predicate calculus formulae containing the quantifiers of Boolean valued functions with respect to partitions. Such a theory is an analogy of usual predicate logic.

MML Identifier: BVFUNC12.

WWW: http://mizar.org/JFM/Vol11/bvfunc12.html

The articles [5], [7], [6], [4], [3], [1], and [2] provide the notation and terminology for this paper.

In this paper Y denotes a non empty set.

The following propositions are true:

(5)[1] For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\neg\forall_{\exists_{a,A}G,B}G = \exists_{\forall_{\neg a,A}G,B}G$.

(6) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\neg\exists_{\forall_{a,A}G,B}G = \forall_{\exists_{\neg a,A}G,B}G$.

(7) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\neg\forall_{\forall_{a,A}G,B}G = \exists_{\exists_{\neg a,A}G,B}G$.

(11)[2] Let a be an element of $Boolean^Y$, G be a subset of PARTITIONS(Y), and A, B be partitions of Y. If G is independent, then $\exists_{\forall_{a,A}G,B}G \Subset \exists_{\exists_{a,B}G,A}G$.

(12) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\forall_{\forall_{a,A}G,B}G \Subset \forall_{\exists_{a,A}G,B}G$.

(13) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\forall_{\forall_{a,A}G,B}G \Subset \exists_{\forall_{a,A}G,B}G$.

(14) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\forall_{\forall_{a,A}G,B}G \Subset \exists_{\exists_{a,A}G,B}G$.

(15) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\forall_{\exists_{a,A}G,B}G \Subset \exists_{\exists_{a,A}G,B}G$.

(16) For every element a of $Boolean^Y$ and for every subset G of PARTITIONS(Y) and for all partitions A, B of Y holds $\exists_{\forall_{a,A}G,B}G \Subset \exists_{\exists_{a,A}G,B}G$.

[1] The propositions (1)–(4) have been removed.
[2] The propositions (8)–(10) have been removed.

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Received August 17, 1999

Published January 2, 2004