

Abstract Submitted
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Using the Deutsch-Jozsa algorithm to partition arrays SAMIR LIPOVACA — Using the Deutsch-Jozsa algorithm, we will develop a method for solving a class of problems in which we need to determine parts of an array and then apply a specified function to each independent part. Since present quantum computers are not robust enough for code writing and execution, we will build a model of a vector quantum computer that implements the Deutsch-Jozsa algorithm from a machine language view using the APL2 programming language. The core of the method is an operator (DJBOX) which allows evaluation of an arbitrary function f by the Deutsch-Jozsa algorithm. Two key functions of the method are GET_PARTITION and CALC_WITH_PARTITIONS. The GET_PARTITION function determines parts of an array based on the function f . The CALC_WITH_PARTITIONS function determines parts of an array based on the function f and then applies another function to each independent part. We will imagine the method is implemented on the above vector quantum computer. We will show that the method can be successfully executed.

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