QIn: Enabling Formal Methods to Deal with Quantum Circuits

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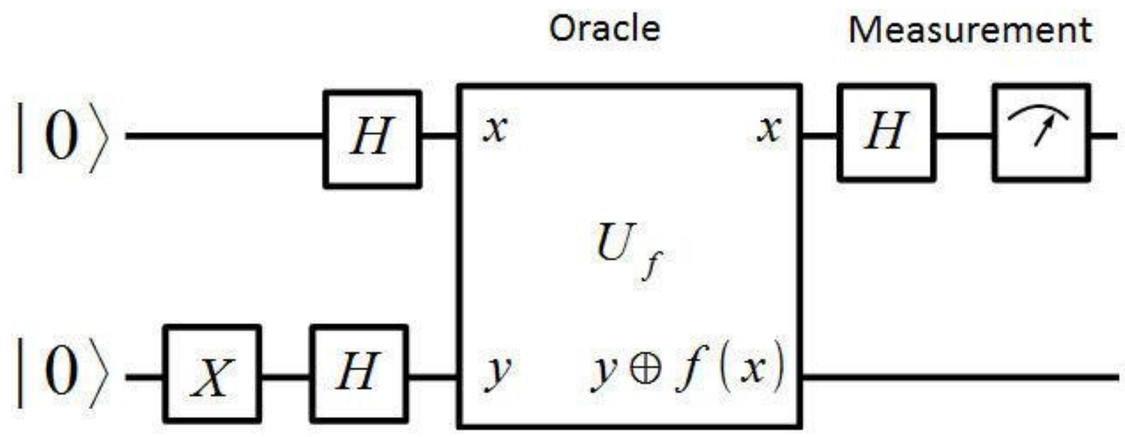

QIn

Generate equivalent Java Program

- **Represent state as arrays of floats**
- **Measurements deterministic: use most likely outcome**
- **State transitions: spelled out matrix multiplications**

Java

Apply analysis tools

- **Use different tools on the same translation**
- **Different methodoligies e.g. Tests vs. Verification vs. Bugfinding supported**

Analysis tools

JUnit

JBMC

The KeY Project

Benefits:

- **Fully automatic**
- **Integrated analysis approach for host language and quantum circuits**
- **Flexibel: Any analysis tool for the host language can be applied**

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