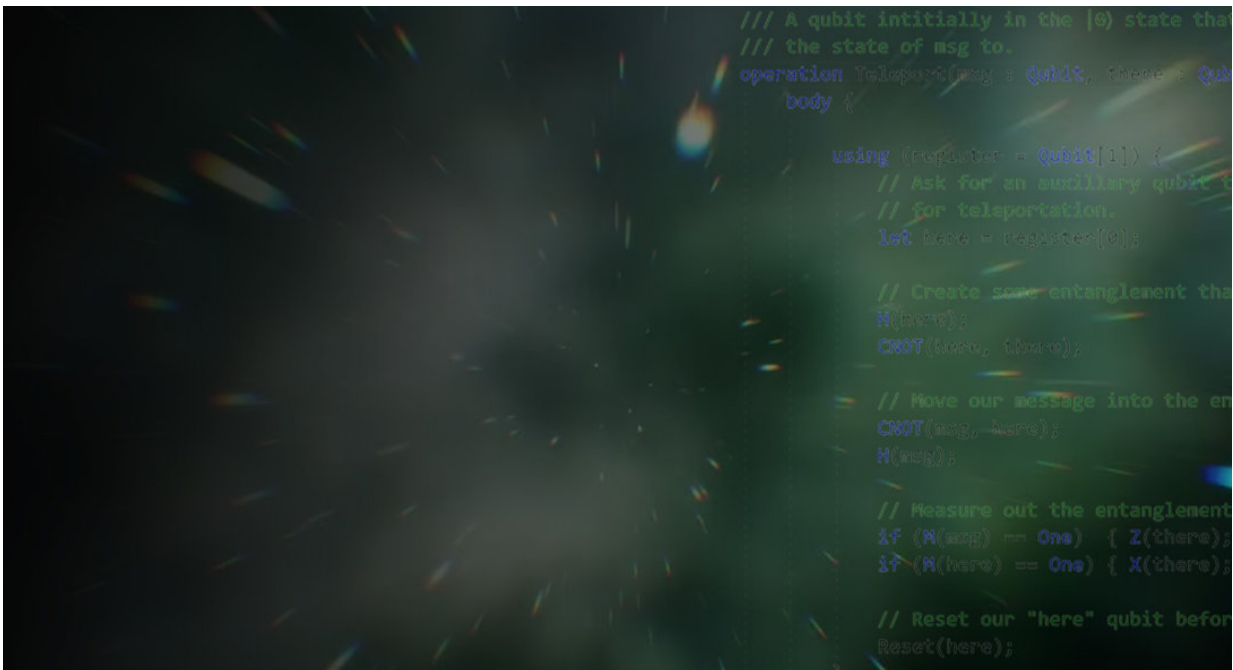# Microsoft launches preview of its Quantum Development Kit

December 13 2017, by Bob Yirka

Credit: Microsoft

(Tech Xplore)—Microsoft has officially released a free preview of its Quantum Development Kit (QDK)—a collection of tools that will allow users to create, compile and run programs written in the Q# (pronounced Q sharp, as in music) programming language. Included in the kit will be a tool for creating Q# programs, access to a quantum simulator and other resources such as documentation, sample programs and libraries of code.

As the possibility of a true usable quantum computer moves closer to reality, companies like Microsoft have begun efforts to encourage as many people as possible to learn quantum programming. With its QDK, Microsoft is targeting not just developers or physicists, but anyone with an interest in programming quantum computers. Such people can start right now by visiting Microsoft's quantum development site and downloading the QDK preview.

As the release statement notes, the QDK has been integrated into Microsoft's Visual Studio—a programming environment that includes a host of developer tools. This suggests that users eager to start writing and running Q# programs need to brush up on the studio if they are not familiar with it.

As Microsoft also notes, the standard simulator will be capable of running as a local simulated 30-logical-qubit quantum computer. They note also that for tougher problems, the company has a more powerful simulator that will allow users to program a simulated 40-logical-qubit quantum computer. Microsoft is also promising that any code written for the simulator will work with the real quantum computer once it is ready for its debut.

Microsoft has also been pushing the idea of the topological qubit, which the company claims will be easier to work with than regular qubits, because it has error correction built in, making things easier for programmers. This, officials with the company suggest, means that the average programmer won't have to concern themselves with such issues, and can instead focus on things like creating programs that will offer better estimates of what the world will look like after a century of global warming. That is the real purpose of quantum computers, after all—to tackle computing problems that are impossible to crunch on today's fastest machines.

More information: — [blogs.microsoft.com/ai/2017/12 … tum-development-kit/](blogs.microsoft.com/ai/2017/12)

— [docs.microsoft.com/en-us/quant … ?view=qsharp-preview](docs.microsoft.com/en-us/quant)

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