

**QOSI**  
**Summer 2020**  
**Quantum Algorithms**

The project aims to demonstrate classical vs quantum strategies in the CHSH game, which can be extended in understanding other algorithms.

Pre requisites

1. Linear algebra
2. Complex numbers

We will conduct 2 sessions every week to cover the basics before moving on to working on the project.

Session	Topic to be discussed	Material/Reference
1	Installing and setting up VSCode and the QDK	<a href="#">Install the Microsoft Quantum Development Kit (QDK) - Microsoft Quantum</a>
2	Revisiting matrices and complex numbers	<a href="#">ComplexArithmetic</a> <a href="#">LinearAlgebra</a>
3	Basics of Q#, quantum computing concepts- the qubit, superposition, notation	<a href="#">The concept of a qubit</a>
4	Single qubit gates	<a href="#">Single-qubit quantum gates</a> <a href="#">BasicGatesKata</a>
5	Multi qubit systems and gates	<a href="#">MultiQubitSystems</a> <a href="#">Multi-qubit quantum gates</a>
6	Understanding the CHSH game	<a href="#">The CHSH Game</a>
7	Begin contributions	<a href="#">Repository</a>

The aim of this project is to be able to create the CHSH game in a manner such that-

1. There is a toggle between two modes to either implement either a classical or quantum strategy
2. Use these modes to run the game multiple times and show statistically the win probability, with two pairs of participants to demonstrate live