**Session 1 Understanding Algorithms with the 21 Card Trick**

1. For this session you will need a pack of playing cards or similar with an equal mix of red and black cards and all different.
2. The session will introduce you to a card trick that is also an algorithm demonstrating the link between the trick and a series of steps. Take your time with this one to get the algorithms correct.
3. Open the ***Session1\_Task***. This explains the algorithm, how to complete the card trick and also explains how and why it works in a repeatable way.
4. Read the first page to get an understanding of what the trick does. Following this read through pages 2-4 which explain the algorithm for the trick and how to make sure it works every time. It describes the mechanics of the algorithm and how mathematically it works. Turn to page 5 and read through the section called “The Magical Effect” to understand the link between the trick and how computers work.
5. On page 6 red the explanation on how the card trick uses binary shifts to move the cards around to the desired place in the pack.
6. Now you can follow the instructions on pages 7-10 to work through the steps of the trick watching what the cards do starting with the following colours. You need to work through the maths of the algorithms with some basic algebra. As you go through this section use your playing cards to follow the instructions and see how the algorithm is working.
7. Finally try the trick for yourself and follow the algorithm as you do it.