ACM Quantum Task

***Truth Table:***

| num1 | num2 | num3 | Sum (Binary) | Sum (Decimal) |

|---------|---------|---------|-------------------|---------------------|

| 00 | 00 | 00 | 000 | 0 |

| 00 | 00 | 01 | 001 | 1 |

| 00 | 00 | 10 | 010 | 2 |

| 00 | 01 | 00 | 001 | 1 |

| 00 | 01 | 01 | 010 | 2 |

| 00 | 01 | 10 | 011 | 3 |

| 00 | 10 | 00 | 010 | 2 |

| 00 | 10 | 01 | 011 | 3 |

| 00 | 10 | 10 | 100 | 4 |

***Logic:***

We first take 3 numbers num1,num2,num3 in binary. They are then placed in the first 3 qubits.

We then apply Hadamard gates to all qubits to create a superposition.

We then use 2 gates called CX and CCX gates to perform NOT and XOR operations respectively.

We store the value of carry in the remaining qubits.

We then measure the value of the qubits which destroys their superposition and gives us a value.

The output is given as bit strings which is then converted to decimal values.