The ADC is a 12-bit ADC and is operated at a voltage of 3.3V. We are using Port 0, Pin 23 as the ADC channel. We are using the dynamic range utilization of the ADC i.e., 0-3.3V which is equivalent to 0-4095 ADC data count. The ADC data count is recorded by varying the voltages using a potentiometer and the values are tabulated in Table 1.

|  |  |
| --- | --- |
| **Input Voltage(V)** | **ADC Data (Count)** |
| 0 | 0 |
| 0.0035 | 0 |
| 0.005 | 0 |
| 0.0064 | 2 |
| 0.0323 | 37 |
| 0.1341 | 169 |
| 0.25 | 317 |
| 0.414 | 534 |
| 0.5 | 649 |
| 0.75 | 964 |
| 0.789 | 1016 |
| 1 | 1298 |
| 1.25 | 1620 |
| 1.5 | 1958 |
| 1.75 | 2269 |
| 2 | 2599 |
| 2.25 | 2924 |
| 2.5 | 3253 |
| 2.75 | 3589 |
| 2.9 | 3775 |
| 3 | 3919 |
| 3.05 | 3969 |
| 3.15 | 4095 |

Table 1: Input Voltage(V) Vs ADC Data (Count)

fig. 1: Input Voltage(V) Vs ADC Data (Count)

We vary the potentiometer and recorded the output voltage values based on the potentiometer’s input voltage:

|  |  |
| --- | --- |
| **Input Voltage (V)** | **Output Voltage (V)** |
| 0 | 0 |
| 0.0035 | 0 |
| 0.005 | 0 |
| 0.0064 | 0.001612 |
| 0.0323 | 0.029817 |
| 0.1341 | 0.13619 |
| 0.25 | 0.255458 |
| 0.414 | 0.43033 |
| 0.5 | 0.523004 |
| 0.75 | 0.77685 |
| 0.789 | 0.818755 |
| 1 | 1.046007 |
| 1.25 | 1.305495 |
| 1.5 | 1.577875 |
| 1.75 | 1.828498 |
| 2 | 2.094432 |
| 2.25 | 2.356337 |
| 2.5 | 2.621465 |
| 2.75 | 2.892234 |
| 2.9 | 3.042125 |
| 3 | 3.158169 |
| 3.05 | 3.198462 |
| 3.15 | 3.3 |
| 3.25 | 3.3 |
| 3.3 | 3.3 |

Table 2: Input Voltage(V) Vs Output Voltage(V)

fig. 2: Input Voltage(V) Vs Output Voltage(V)