|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Binary Number [0,256] to 7-Segment Displays** | | | | | | | |
| **Number** | | **7-Segment Displays** | | | | | |
| **Decimal** | **Binary** | **Hundreds** | | **Tens** | | **Units** | |
| **0 a b c d e f g** | **Hex** | **0 a b c d e f g** | **Hex** | **0 a b c d e f g** | **Hex** |
| **0** | **00000000** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 1 1 1 1 1 1 0** | **7E** |
| **1** | **00000001** | **0 0 1 1 0 0 0 0** | **30** |
| **2** | **00000010** | **0 1 1 0 1 1 0 1** | **6D** |
| **3** | **00000011** | **0 1 1 1 1 0 0 1** | **79** |
| **4** | **00000100** | **0 0 1 1 0 0 1 1** | **33** |
| **5** | **00000101** | **0 1 0 1 1 0 1 1** | **5B** |
| **6** | **00000110** | **0 1 0 1 1 1 1 1** | **5F** |
| **7** | **00000111** | **0 1 1 1 0 0 0 0** | **70** |
| **8** | **00001000** | **0 1 1 1 1 1 1 1** | **7F** |
| **9** | **00001001** | **0 1 1 1 0 1 1 1** | **73** |
| **10** | **00001010** | **0 0 1 1 0 0 0 0**  **0 0 1 1 0 0 0 0** | **30**    **30** | **0 1 1 1 1 1 1 0** | **7E** |
| **11** | **00001011** | **0 0 1 1 0 0 0 0** | **30** |
| **12** | **00001100** | **0 1 1 0 1 1 0 1** | **6D** |
| **13** | **00001101** | **0 1 1 1 1 0 0 1** | **79** |
| **14** | **00001110** | **0 0 1 1 0 0 1 1** | **33** |
| **15** | **00001111** | **0 1 0 1 1 0 1 1** | **5B** |
| **16** | **00010000** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 1 0 1 1 1 1 1** | **5F** |
| **17** | **00010001** | **0 1 1 1 0 0 0 0** | **70** |
| **18** | **00010010** | **0 1 1 1 1 1 1 1** | **7F** |
| **19** | **00010011** | **0 1 1 1 0 1 1 1** | **73** |
| **20** | **00010100** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 1 1 1 0** | **7E** |
| **21** | **00010101** | **0 0 1 1 0 0 0 0** | **30** |
| **.**  **.**  **.** | | | | | | | |
| **29** | **00011101** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 0 1 1 1** | **73** |
| **30** | **00011110** | **0 1 1 1 1 0 0 1** | **79** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.** | | | | | | | |
| **39** | **00100111** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 1 1 1 1 0 0 1** | **79** | **0 1 1 1 0 1 1 1** | **73** |
| **40** | **00101000** | **0 0 1 1 0 0 1 1** | **33** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.** | | | | | | | |
| **49** | **00110001** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 0 1 1 0 0 1 1** | **33** | **0 1 1 1 0 1 1 1** | **73** |
| **50** | **00110010** | **0 1 0 1 1 0 1 1** | **5B** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.**  **.** | | | | | | | |
| **99** | **01100011** | **BLANK**  **0 0 0 0 0 0 0 0** | **00** | **0 1 1 1 0 1 1 1** | **73** | **0 1 1 1 0 1 1 1** | **73** |
| **100** | **01100100** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 1 1 1 0** | **7E** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.** | | | | | | | |
| **109** | **01101101** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 1 1 1 0** | **7E** | **0 1 1 1 0 1 1 1** | **73** |
| **110** | **01101110** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 1 1 1 0** | **7E** |
| **111** | **01101111** | **0 0 1 1 0 0 0 0** | **30** |
| **.**  **.**  **.** | | | | | | | |
| **119** | **01110111** | **0 0 1 1 0 0 0 0** | **30** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 0 1 1 1** | **73** |
| **120** | **01111000** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.** | | | | | | | |
| **189** | **10111101** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 1 1 1 1** | **7F** | **0 1 1 1 0 1 1 1** | **73** |
| **190** | **10111110** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 0 1 1 1** | **73** | **0 1 1 1 1 1 1 0** | **7E** |
| **191** | **10111111** | **0 0 1 1 0 0 0 0** | **30** |
| **.**  **.**  **.** | | | | | | | |
| **199** | **11000111** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 0 1 1 1** | **73** | **0 1 1 1 0 1 1 1** | **73** |
| **200** | **11001000** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 1 1 1 0** | **7E** | **0 1 1 1 1 1 1 0** | **7E** |
| **201** | **11001001** | **0 0 1 1 0 0 0 0** | **30** |
| **.**  **.**  **.** | | | | | | | |
| **209** | **11010001** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 1 1 1 0** | **7E** | **0 1 1 1 0 1 1 1** | **73** |
| **210** | **11010010** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.** | | | | | | | |
| **219** | **11011011** | **0 1 1 0 1 1 0 1** | **6D** | **0 0 1 1 0 0 0 0** | **30** | **0 1 1 1 0 1 1 1** | **73** |
| **220** | **11011100** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.** | | | | | | | |
| **229** | **11100101** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 1 1 0 1 1 1** | **73** |
| **230** | **11100110** | **0 1 1 1 1 0 0 1** | **79** | **0 1 1 1 1 1 1 0** | **7E** |
| **.**  **.**  **.** | | | | | | | |
| **250** | **11111010** | **0 1 1 0 1 1 0 1** | **6D** | **0 1 0 1 1 0 1 1** | **5B** | **0 1 1 1 1 1 1 0** | **7E** |
| **251** | **11111011** | **0 0 1 1 0 0 0 0** | **30** |
| **252** | **11111100** | **0 1 1 0 1 1 0 1** | **6D** |
| **253** | **11111101** | **0 1 1 1 1 0 0 1** | **79** |
| **254** | **11111110** | **0 0 1 1 0 0 1 1** | **33** |
| **255** | **11111111** | **0 1 0 1 1 0 1 1** | **5B** |

**Summary:**

1. **For 1st Digit (Units)**
2. **It cycles from 0 to 9 continuously from 0 to 255**
3. **For 2nd Digit (Tens)**
4. **It is “blank” for numbers 0 to 9**
5. **I then cycles from 1 to 9 up to 99**
6. **It cycles from 0 to 9 starting with 100 and ends at 255**
7. **For 3rd Digit (Hundreds)**
8. **It remains “blank” for numbers 0 – 99**
9. **It is 1 for numbers 100 – 199**
10. **And is 2 for numbers 200 - 255**