ICS3U: Introduction to Computer Science, Grade 11, University Preparation

Unit 3: Making a List, Checking it Twice . . .

Activity 1: Bits and Bytes

Number Systems

Convert each **decimal** number into a **binary** number.

1. **137** 137-128= 9; 9-64 = N/A; 9-32 = N/A; 9-16 = N/A; 9-8 = 1; 1-4 = N/A; 1-2 = N/A; 1-1=0
   ***Therefore, 137 decimal = 10001001* binary**

2. **128** 128-128=0; 0-64 = N/A; 0-32 = N/A; 0-16 = N/A; 0-8 = N/A; 0-4 = N/A; 0-2 = N/A; 0-1=N/A
   ***Therefore, 128 decimal = 10000000* binary**

Convert each **binary** number into a **decimal** number.

3. **11001001** 128+64+0+0+8+0+0+1 = 201
   Therefore, 11001001 binary = 201 decimal

4. **01000111** 0+64+0+0+0+4+2+1 = 71
   Therefore, 01000111 binary = 71 decimal

Convert each **hex** number to a **binary** number.

5. **AA** A=1010; A=1010
   Therefore, AA hex = 10101010 binary

6. **19** 1 = 0001; 9 = 1001
   Therefore, 19 hex = 00011001 binary

Convert each **binary** number to a **hex** number.

7. **11101101** 1110 = E; 1101 = D
   Therefore, 11101101 binary = ED hex

8. **11001110** 1100 = C; 1110 = E
   Therefore, 11001110 binary = CE hex

Convert each **hex** number to a **decimal** number.

9. ABCD A = 40960; B= 2816; C= 192; D= 13
Therefore, ABCD hex = 43981 decimal

10. 2F3E 2 = 8192; F = 3840; 3 = 48; E = 14;
Therefore, 2F3E hex = 12094 decimal

Convert each **decimal** number to a **hex** number.

11. 1095 1095/16 = 68 R 7; 68/16 = 4 R 4; 4/16 = 0 R 4
Therefore, 1095 decimal = 447 hex

12. 99 99/16 = 6 R 3; 6/16 = 0 R 6
Therefore, 99 decimal = 63 hex