CSC201 Practice Exercise P2 Your Name: Elick Coval\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Perform addition or subtraction** in Binary, Octal, and Hexadecimal.  Assume all values are **8 bit unsigned.**  
(Don't use a calculator -- you won't be able to use a calculator on exams, so you should learn how to do this without one.)  
**Convert** all numbers to **decimal**, then **verify** that the decimal results are correct.  
For **binary subtraction**, in the **second column**,   
**copy** the first number, **convert** the second binary number to its **2's complement**, then **add them**.   
**After** you have performed the calculations using your brain, verify your results using a calculator.

|  |  |
| --- | --- |
| **binary addition** | verification (decimal) |
| 00100000b | 32 |
| + 00000001b | 1 |
| 00100001 | 33 |
|  |  |
| 10011111b | 159 |
| + 01000001b | 65 |
| **11100000** | 224 |
|  |  |
| 00110110b | 54 |
| + 00110110b | 54 |
| **01101100** | 108 |
|  |  |
| **octal addition** | verification (decimal) |
| 14o | 12 |
| +  21o | 17 |
| **35o** | 29 |
|  |  |
| 55o | 45 |
| +  17o | 15 |
| **74** | 60 |
|  |  |
| 78o | No 8’s in base 8 |
| +  33o |  |
|  |  |
|  |  |
| **hexadecimal addition** | verification (decimal) |
| 44h | 68 |
| FFh | 255 |
| **143** | 323 |
|  |  |
| 5Ah | 90 |
| 2Bh | 43 |
| **85** | 133 |
|  |  |
| CDh | 205 |
| 17h | 23 |
| **E4** | 228 |

|  |  |  |
| --- | --- | --- |
| **binary subtraction** | use 2's complement | verification (decimal) |
| 01100100 |  | 100 |
| - 00010000 | **11110000** | 16 |
| **01010100** |  | 84 |
|  |  |  |
| 10011001 |  | 153 |
| - 01100111 |  | 103 |
| **00110010** |  | 50 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| **octal subtraction** | verification (decimal) | |
| 74o | 60 | |
| - 14o | 12 | |
| 60 | 48 | |
|  |  | |
| 79o | No 9’s in base 8 | |
| - 67o |  | |
|  |  | |
|  |  | |
| 201o |  | |
| - 69o | No 9’s in base 8 | |
|  |  | |
|  |  | |
| **hexadecimal subtraction** | verification (decimal) | |
| A0h | 160 | |
| - B3h | 179 | |
| FFED | -19 | |
|  |  | |
| 87h | 135 | |
| - 11h | 17 | |
| **76** | 118 | |