# Homework 1

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CS270 Fall 2020

Brennen Green

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1. Output:
   – ./p1
   0 * 0 >= 0
   40000 * 40000 >= 0
   -35 * -35 >= 0

   – ./p2
   50000 * 50000 >= 0
   40000 * 40000 >= 0
   50000 * 50000 >= 0

   – ./p3
   They are equal!
   They are equal!
   They are not equal!

   Fri 21 Aug 2020 01:42:13 PM EDT
   – ./p4 2
   fun(2) = 3.140000
   Fri 21 Aug 2020 01:42:35 PM EDT

   Fri 21 Aug 2020 01:43:30 PM EDT
   – ./p5 2
   Fri 21 Aug 2020 01:44:29 PM EDT

2. (a) 255 - 128 = 127 - 64 = 63 - 32 = 31 - 16 = 15 - 8 = 7 - 4 = 3 - 2 = 1 - 1 = 0 ‖
Decimal: $(255)_{10}$ Binary: $(11111111)_2$ Hexadecimal: $(0xFF)_{16}$ Octal: $(377)_8$

   (b) 152 - 128 = 24 - 16 = 8 - 8 = 0 = 1001 1000‖ 0.2 * 2 = 0.4 * 2 = 0.8 * 2 = 1.6 - 1 = 0.6 * 2 = 1.2 - 1 = 0.2 * 2 = 0.4 * 2 = 0.8 * 2 = 1.6 ‖
Decimal: $(152.2)_{10}$ Binary = $(10011000.00110011)_2$ Hexadecimal: $(0x98.33)_{16}$ Octal: $(230.146)_8$

   (c) 393 - 256 = 137 - 128 = 9 - 8 = 1 - 1 = 0 = 0001 1000 1001 ‖ 0.3515625 * 2 = 0.703125 * 2 = 1.40625 - 1 = 0.40625 * 2 = 0.8125 * 2 = 1.625 - 1 = 0.625 * 2 = 1.25 - 1 = 0.25 * 2 = 0.5 * 2 = 1 = 0.0101101 ‖
Decimal: $(193.3515625)_{10}$ Binary: $(11000001.01011010)_2$ Hexadecimal: $(0xC1.5A)_{16}$ Octal: $(301.264)_8$

3. (a) 2.1
      i. 0010 0101 1011 1001 1101 0010
      ii. 0xAE49
      iii. 1010 1000 1011 0011 1101
      iv. 0x322D96

   (b) 2.3
      i. 0 0000 0000 0x00
      ii. 158 1001 1110 0x9E
      iii. 76 0010 1100 0x4C
      iv. 145 0101 0001 0x91
      v. 173 1010 1110 0xAD
      vi. 60 0011 1100 0x3C
      vii. 241 1111 0001 0xF1

   (c) 2.4
      i. 0x605C + 0x5 = 0x6061
      ii. 0x605C - 0x20 = 0x603C
      iii. 0x605C + 32 = 0x607C
      iv. 0x60FA - 0x605C = 0x9E

   (d) 2.8
      i. a = 10110001

ii. b = 00011110

iii. a & b = 01000000

iv. a | b = 11101111

v. a $\oplus$ b = 10101111

(e) 2.16

i. 0xD4 = 1101 0100 = 0101 0000 0x50 = 0001 1010 0x1A = 1111 1010 0xFA

ii. 0x64 = 0110 0100 = 1001 0000 0x90 = 0000 1100 0x0C = 0000 1100 0x0C

iii. 0x72 = 0111 0010 = 1100 1000 0xC8 = 0000 1110 0x0E = 0000 1110 0x0E

iv. 0x44 = 0100 0100 = 0001 0000 0x10 = 0000 1000 0x08 = 0000 1000 0x08