CPSC 1150

Assignment 1

Shakir Ali 100268078

**1.**

**a.**

|  |  |  |  |
| --- | --- | --- | --- |
| 53 | 52 | 51 | 50 |
| 125 | 25 | 5 | 1 |

32710 =

327 – 125 \* 2 = 77

77 – 25 \* 3 = 2

2 – 1 \* 3 = 0

= 53 \* 2 + 52 \* 3 + 50 \* 3

= 2303­5­

**b.**

F3D16 = 15 \* 162 + 3 \* 16 + 13 \* 160

= 3840 + 48 + 13

= 309110

|  |  |  |  |
| --- | --- | --- | --- |
| 83 | 82 | 81 | 80 |
| 512 | 64 | 8 | 1 |

**c.**

7378

= 7 \* 64 + 3 \* 8 + 7 \* 1

|  |  |  |
| --- | --- | --- |
| 162 | 161 | 160 |
| 256 | 16 | 1 |

= 448 + 24 + 7

= 47910 =

479 – 256 \* 1 = 223

223 – 16 \* 13 = 208

15 – 1 \* 15 = 0

= 162 \* 1 + 16 \* 13 + 1 \* 15

= 1DF16

**d.**

since 23  = 8 , we make groups of three

1001010012 =

|  |  |  |
| --- | --- | --- |
| 1002 = 410 = 4­8 | 1012 = 510  =58 | 0012 = 110  = 18­ |

= 4518

**2.**

**a.** 11.12510

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 23 | 22 | 21 | 20 | 21/2 | 21/4 | 21/8 | 21/16 |
| 8 | 4 | **2** | 1 | 0.5 | 0.25 | 0.125 | 0.0625 |

11.12510  = 23 \* 1 + 2 \* 1 + 20 \* 1 + 0 \* 21/2  + 0 \* 21/4  + 1 \* 21/8

= 101.0012

**b.** 1101.11012 = 23 \* 1 + 22 \* 1 + 2 \* 0 + 20 \* 1 + 21/2 \* 1 + 21/4 \* 1 + 21/8 \* 0 + 21/16 \* 1

= 8 + 4 + 1 + 0.5 + 0.25 + 0.0625

= 13.8125

**c.** 27.34 binary representation is 0 0.1101101010 000101

27.33 binary representation is 0 0.1101101010 000101

They are the same . What that means is that in order to reach .340 or .330 exactly in binary the iterations you have to go through is more than whats being displayed hence they are the same

**2. a.**101101101­2 + 111012

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 1 | 1 | 1 | 1 |  | 1 |  |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |

= 1100010102

**b.** 110101102 – 1010002

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 10 | 0 | 10 |  |  |  |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
|  |  | 1 | 0 | 1 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |

**4.**

**5 + 5 =** 01012 + 01012 = 10102 = -6

It is so because 5+5 = 10 which is beyond the range of bit 2’s complement signed number causing an overflow

**5.** 54 52 48 75 32 111 117 103 104 116 32 116 111 32 98 101 32 101 110 111 117 103 104 32 102 111 114 32 97 110 121 98 111 100 121 46=

640K ought to be enough for anybody.

According to the internet , Bill Gates stated so in 1981.

**6**.

**a.**

**A 11000**

**B 11111**

**C 11110**

**D 11101**

**E 1011**

**G 11100**

**I 1010**

**N 1001**

**O 1000**

**R 11011**

**S 00**

**V 11010**

**Y 11001**

**Space 01**

**C I) 63**

**2) 136**

**3) 136/63 = 2.1587**

**7.** It should be a jpeg because it is not a collection of shapes hence making it a bad choice to be encoded as gif since it would make the compression would not be that great compared to jpeg

Also it will a bad choice to encode it as a png since there is not a lot of transparent area making the compression ratio bad compared to jpeg

**8.**

I would use mp3 format since I want to put it up on the website , since mp3 is more compatible than ogg and has a higher compression ration than wav .