**CSC 1100 – Problem Solving and Programming**

**Homework 1 – Rory Lange**

**25 points – Due January 21, 11am**

**Late deadline is January 23, 11:59pm, but 20% off**

**a)** Save this document with your name and the homework number somewhere in the file name.

**b)** Type/paste your answers into the document.

**c)** Submit this document to the Canvas item where you downloaded this document.

**1) [4 points]** List the top four applications you use in a typical week. Include the platform (laptop, phone, etc.) you run the application from, and the estimated time per week (hours) you use the application.

| # | Application | Platform | Estimated time per week |
| --- | --- | --- | --- |
| **1** | Microsoft Edge | PC | 12 hours |
| **2** | Tik Tok | phone | 5 hours |
| **3** | snapchat | Phone | 5 hours |
| **4** | overwatch | Pc | 5 hours |

**2) [5 points]** Using information from a laptop vendor web page, choose one of their products and complete the following for the product:

| Item | Description |
| --- | --- |
| Web page hyperlink | [Dell XPS 13 Laptop | Dell USA](https://www.dell.com/en-us/shop/dell-laptops/new-xps-13-laptop/spd/xps-13-9310-laptop/xn9310cto210h) |
| Product vendor | Dell |
| Product name | Dell XPS 13 9310 |
| Application processor (AP) / central processing unit (CPU) | 11th gen intel 13-1115G4 |
| Memory option/size | 8gb LPDDR4x |
| Storage option/size | 256gb PCIe NVMe SSD |
| Operating system | Windows 10 Home |
| Price | $999.99 |

**3) [8 points]** Convert the following numbers. Show your work for each conversion.

1. Binary 1011 to decimal
   1. 1,10,11, 100,101,110,111,1000,1001,1010,1011
   2. Binary 1101 = decimal 11
2. Binary 101110 to decimal
   1. 2^5x1, 2^4x0, 2^3x1, 2^2x1, 2^1x1, 2^0x0
   2. 32+0+8+4+2+0
   3. Decimal 46
3. Decimal 53 to binary
   1. 53/2 = 26
      1. 1
   2. 26/2 = 13
      1. 0
   3. 13/2 = 6
      1. 1
   4. 6/2 = 3
      1. 0
   5. 3/2 = 1
      1. 1
   6. ½ = 0
      1. 1
   7. 110101 = 53
4. Decimal 137 to binary
   1. 137/2 = 68
      1. 1
   2. 68/2 = 34
      1. 0
   3. 34/2 = 17
      1. 0
   4. 17/2 = 8
      1. 1
   5. 8/2 = 4
      1. 0
   6. 4/2 = 2
      1. 0
   7. 2/2 = 1
      1. 0
   8. ½ = 0
      1. 1
   9. 10001001

**4) [4 points]** How many distinct values could you represent with the following memory quantities? Show your calculation for each one.

1. 3 bits
   1. 111
   2. 2^2x1, 2^1x1,2^0x1
   3. 4+2+1 = 9 distinct values
2. 12 bits
   1. 111111111111
   2. 2^11,2^10,2^9,2^8,2^7,2^6,2^5,2^4,2^4,2^3,2^2,2^1,2^0
   3. 2048+1024+512+256+128+64+32+16+8+4+2+1
   4. 4095 distinct values

**5) [1 points]** QR codes represent another data-encoding technique. Scan the following QR code and enter the encoded data:



Encoded data: ► the key person in software engineering is the customer

**6) [3 points]** MP4 is another data-encoding technique. Using information from a web page, complete the following:

| Item | Description |
| --- | --- |
| Web page hyperlink | [What Is MP4 File Format? All About MP4 File Recovery (cleverfiles.com)](https://www.cleverfiles.com/howto/recover-deleted-mp4.html#:~:text=Developed%20by%20the%20International%20Organization,IEC%2014496%2D14%3A2003.) |
| MP4 purpose | Mp4 is a compressed file used to store media types such as videos, music, subtitles, pictures and others. |
| MP4 creator | The mp4 file format was created by the Internal Organization for Standardization and version 1 was released in 2001. |
| Latest version | Version 2, or mp42, was released in 2003 |