**Image Processing**

**Homework 1**

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**Question 1:**

**Section A:**

**There are a bunch of factors to take in mind, to mention some:**

1. **Sensor Size: the bigger the sensor the more pixels it can fit without compromising the image quality.**
2. **Processing power: higher resolution requires more processing power and faster processing for image capturing and rendering.**
3. **Storage capacity: the higher the resolution the larger the file size is, therefore it requires more storage.**
4. **Editing and compression: high resolutions require efficient algorithms for compression and post-processing.**
5. **Application: the need for a specific case dictates the requirements, for example if you are a professional photographer then you might need a better resolution than a person with a normal use for the camera.**

**Section B:**

**The strength of image quantization involves several considerations:**

1. **Bit count: older hardware supported fewer bits per pixel, therefore limiting the color representation.**
2. **Memory constraints: lower quantization reduces storage and processing requirements.**
3. **Processing power: limited computational capacity required simpler quantization to reduce rendering time.**
4. **Data transfer rates: lower quantization minimized data transfer overheads for slower connections.**