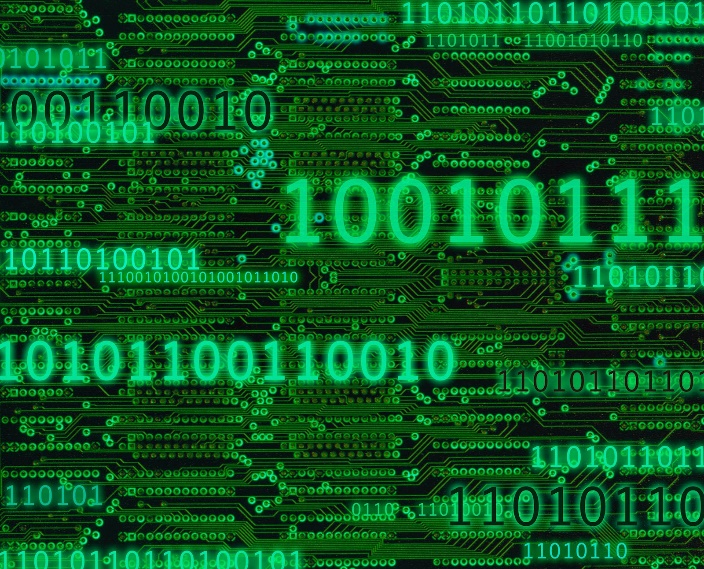
**Hexadecimal Guide**

**Introduction**

In this assignment, I will be defining what denary and hexadecimal are, I will explaining how they are both converted from hexadecimal to denary and denary to hexadecimal.

**Hexadecimal**

Hexadecimal numbers are numbers that go from 0 to 9 and A to F. These numbers are used in computer systems designers and programmers. Once the programmers are programming, they are unknown numbers and letters that they do not understand. Hexadecimal is used to convert the numbers and letters so they understand what they are. An example of a hexadecimal number is 2AF3. An example of where it is used is Colours and IP addresses.

**Denary**

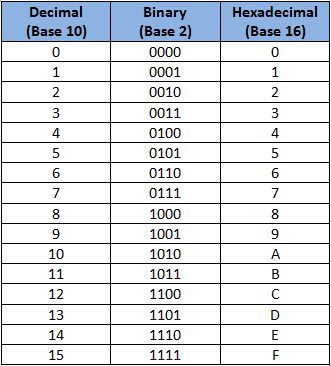
Denary are integers to what the numbers are converted to. These numbers are used so they can make it simpler once it has been converted. People feel comfortable once they know numbers that they have dealt with. For example, if 01010111 is binary, denary are numbers that it is used to represent. Especially for denary conversion to hexadecimal, it goes from 0 to 15. It can be more, but this is the basics that you need to know.

**Conversion**

**Hexadecimal to denary**

In this part, you have to covert hexadecimal to denary. As I have mentioned before, an example of a hexadecimal could be 2AF3. However, we are going to use 2-digit hexadecimal to make it simpler but the concept of converting is the same. C6 we are going to convert. For denary, A-F follows on to from 9. Therefore, C= 12. 6 would equal 6. To convert this, you would use the place values, 8, 4, 2, 1 and add it up to make 12.This would look like this in denary:

1100 0110



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 1 | **1** | **0** | **0** | **0** | **1** | **1** | **0** |

Wherever it says 1, you add it all up to get denary. 128 + 64 + 4 + 2 = 198. C6 = 198

+

**Binary to Hexadecimal**

A series of numbers would appear that would seem confusing. All you have to use is these numbers when converting it. When you want to convert anything into hexadecimal, you will need to use these place values shown below to convert it.

**1010 1111**

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 1 | **0** | **1** | **0** |

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 1 | **1** | **1** | **1** |

Wherever a one appears below the number, you add it up to make one part of the together. So, the first one would add up to 10 and the second part would add up to 15. The table shown above, 10 will equal to A and 15 will equal to F. Therefore, the answer is AF.

**Hexadecimal to Binary**

This is the opposite of binary to hexadecimal. All you do for this part is AB would appear. You have to know the table by heart, shown above, to complete all of these tasks. ‘A’ would equal to 10 and ‘B’ to 11. You have to add up 11 and 10 in the place values to get the binary.

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 1 | **0** | **1** | **0** |

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 1 | **0** | **1** | **1** |

The numbers shown below, this would be the answer to the conversion below. *1010 1011*

**Binary to Hexadecimal**

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 1 | **1** | **0** | **0** |

Binary to hexadecimal is simple. If the number 1100 0110 came up in an exam and told you to convert it to 8-bit binary numbers into 2 digit hexadecimal. All you have to do is put the place values in for hexadecimal. This is how you would insert it in the exam.

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | 4 | 2 | 1 |
| 0 | **1** | **1** | **0** |

All you do is add the place values up and it would equal 12 because there is 1 below it. And the other one would be 6. All you do is follow up 12 and 6 into the table above and it would equal **C6** as the answer.