Introduction to Computing

CPIT 201 - Homework 1

1. Convert the **decimal number to binary** using your own KAU ID.

* KAU ID: 2237836
* Add number 2 in front of the KAU ID: 22237836
* Now, split this number into two decimal digits

|  |  |  |  |
| --- | --- | --- | --- |
| 22 | 23 | 78 | 36 |

* Convert every two decimal digits to binary using multiples of 2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
| 00100100 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 36 |
| 01001110 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 78 |
| 00010111 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 23 |
| 00010110 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 22 |

1. Convert the **binary numbers to** **hexadecimal numbers** using your own KAU ID binary numbers form question 1.

* KAU ID binary numbers:

|  |  |  |  |
| --- | --- | --- | --- |
| 00010110 | 00010111 | 01001110 | 00100100 |

* Convert every 4 binary digits to hexadecimal digit

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 00010110 | | 00010111 | | 01001110 | | 00100100 | |
| 0001 | 0110 | 0001 | 0111 | 0100 | 1110 | 0010 | 0100 |
| 1 | 6 | 1 | 7 | 4 | E | 2 | 4 |
| 16 | | 17 | | 4E | | 24 | |

1. Convert the **binary numbers to hexadecimal numbers** using your own KAU ID binary numbers form question 1.

* KAU ID binary numbers:

|  |  |  |  |
| --- | --- | --- | --- |
| 00010110 | 00010111 | 01001110 | 00100100 |

* Convert every 3 binary digits to hexadecimal digit

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 00010110 | | | 00010111 | | | 01001110 | | | 00100100 | | |
| 000 | 010 | 110 | 000 | 010 | 111 | 001 | 001 | 110 | 000 | 100 | 100 |
| 0 | 2 | 6 | 0 | 2 | 7 | 1 | 1 | 6 | 0 | 4 | 4 |
| 26 | | | 027 | | | 116 | | | 044 | | |

1. Convert the **fractional** **decimal numbers to binary numbers** using your own KAU ID decimal numbers form question 1.

* KAU ID decimal numbers:

|  |  |  |  |
| --- | --- | --- | --- |
| 22 | 23 | 78 | 36 |

* Add a dot to every decimal number to make it fraction

|  |  |  |  |
| --- | --- | --- | --- |
| 0.22 | 0.23 | 0.78 | 0.36 |

* Convert every block to binary using four digits only, by multiple the numbers by two and take the left part of the point

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0.22 | | 0.23 | | 0.78 | | 0.36 | |
| 0.44 | 0 | 0.46 | 0 | 0.56 | 1 | 0.72 | 0 |
| 0.88 | 0 | 0.92 | 0 | 0.12 | 1 | 0.44 | 1 |
| 0.76 | 1 | 0.84 | 1 | 0.24 | 0 | 0.88 | 0 |
| 0.52 | 1 | 0.68 | 1 | 0.48 | 0 | 0.76 | 1 |
| 0.0011 | | 0.0011 | | 0.1100 | | 0.0101 | |

1. Ali says (456)8 is greater than (12F)16. Is he right? Explain.

* Converting both numbers to decimal number, then compare the numbers

|  |
| --- |
| (456)8 = (4×82) + (5×81) + (6×80) = (302)10 |
| (12F)16 = (1×162) + (2×161) + (15×160) = (303)10 |