**Part 1:**

**Exercise 1:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Decimal** | **4-bit Binary** | **Decimal** | **8-bit Binary** | **Decimal** | **16-bit Binary** |
| 9 | 1001 | 7 | 0000 0111 | 255 | 0000 0000 1111 1111 |
| 7 | 0111 | 34 | 0011 0100 | 192 | 0000 0000 1100 0000 |
| 2 | 0010 | 125 | 0111 1101 | 188 | 0000 0000 1011 1100 |
| 15 | 1111 | 157 | 1001 1101 | 312 | 0000 0001 0011 1000 |
| 12 | 1100 | 162 | 1010 0010 | 517 | 0000 0010 0000 0101 |
| 11 | 1011 | 37 | 0011 0111 | 264 | 0000 0001 0000 1000 |
| 6 | 0110 | 66 | 0110 0110 | 543 | 0000 0010 0001 1111 |
| 5 | 0101 | 77 | 0111 0111 | 819 | 0000 0011 0011 0011 |
| 8 | 1000 | 88 | 1000 1000 | 1027 | 0000 0100 0000 0011 |
| 13 | 1101 | 99 | 1001 1001 | 2055 | 0000 1000 0000 0111 |
| 14 | 1110 | 109 | 0110 1101 | 63 | 0000 0000 0011 1111 |

**EXERCISE 2:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Decimal** | **Binary** | **Hexa.** | **Decimal** | **16-bit Binary** | **Hexadecimal** |
| 9 | 1001 | 9 | 255 | 0000 0000 1111 1111 | 00FF |
| 127 | 0111 1111 | 7F | 192 | 0000 0000 1100 0000 | 00C0 |
| 125 | 0111 1101 | 7D | 188 | 0000 0000 1011 1100 | 00BC |
| 157 | 1001 1101 | 9D | 312 | 0000 0001 0011 1000 | 0138 |
| 162 | 1010 0010 | A2 | 517 | 0000 0010 0000 0101 | 0205 |
| 37 | 0010 0101 | 25 | 264 | 0000 0001 0000 1000 | 0108 |
| 66 | 0100 0010 | 42 | 543 | 0000 0010 0001 1111 | 021F |
| 77 | 0100 1101 | 4D | 819 | 0000 0011 0011 0011 | 0333 |
| 88 | 0101 1000 | 58 | 1027 | 0000 0100 0000 0011 | 0403 |
| 99 | 0110 0011 | 63 | 2055 | 0000 1000 0000 0111 | 0807 |
| 109 | 0110 1101 | 6D | 63 | 0000 0000 0011 1111 | 003F |

**Exercise 3:**

* **3245q + 247q** = 0110 1010 0101b + 0000 1010 0111b

= 3514q = 0111 0100 1100b

* **1A7Bh + 26FE7h** = 0001 1010 0111 1011b + 0010 0110 1111 1110 0111b

= 28A62h = 0010 1000 1010 0110 0010b

* **1101101101b - 10110111b** =0010 1011 0110b
* **3654q – 337q** = 0111 1010 1100b - 1101 1111b

= 3315q = 0110 1100 1101b

* **3AB7h – 1FAh** = 0011 1010 1011 0111b – 0001 1111 1010b

= 38BDh = 0011 1000 1011 1101b

* **36Ah – 576q** = 0011 0110 1010b – 0001 0111 1110b

= 1EC h = 0001 1110 1100b

* **64AEh – 1001101b** = 0110 0100 1010 1110b – 0100 1101b

= 62 141q

101101111 b

+ 100111011 b

110110001 b

110001101b

10111101000b

* **1011010 b\* 1011b** = 0011 1101 1110b
* **1101000b + 2AB h + 345 q** = 110 1000b + 0010 1010 1011b + 1110 0101b

= 0011 1111 1000b = 3F8 h = 1770 q

* **3AFh / 1Ch** = 0011 1010 1111b / 0001 1100b
* =0010 0001 b = 33d
* **3ACh – 562q** = 0011 1010 1100b – 0001 0111 0010b

= 0010 0011 1010b = 570 d

* **3FFA h / 327q** = 0011 1111 1111 1010b / 1101 0111b

= 0100 1100b = 76 d

**Exercise 4 :**

**251d** = 1111 1011b

**163d** = 1010 0011b

**117d** = 0111 0101b

**551d** = 0000 0010 0010 0111b

**160d** = 0000 0000 1010 0000b

**443d** = 0000 0001 1011 1011b

**-51d** = 1100 1101b

**-163d** = 0101 1101b

**-117d** = 1000 1011b

**320d** = 1 0100 0000b

**0110 0011b** = 99d

**1000 1111b** = 143d

**1100 1010b** = 202d

**0100 1100b** = 76d

**Part 2:**

|  |  |
| --- | --- |
| Code of main | 4199728 |
| n | 4223024 |
| x | 4223032 |
| c1 | 4223040 |
| m | 6487580 |
| s | 6487578 |
| L | 6487572 |
| y | 6487568 |