**CS470 Computer Architecture**

Exercise on Arithmetic Units, Spring 2017

Discuss March 8, 2017

1. In the table below, show how multiplication would proceed, multiplicand is 1110 and multiplier is 1101. Use as many rows as needed. Use the optimized multiplier below.



|  |  |  |  |
| --- | --- | --- | --- |
| **Iteration** | **Step** | **Multiplicand** | **Product Register** |
| 0 | Initial values |  |  |  |
| 1 |  |  |  |  |
|  |  |  |  |  |
| 2 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. In the figure below on the left, give the values of the Result and CarryOut if a =0, b =1, Less = 0 Ainvert =0 Binvert = 1, CarryIn = 1 and Operation = 10.

|  |  |
| --- | --- |
|  | 23 |

1. In the figure on the right, give values on all lines if +3 and -7 are being added. You only need to show the values for the three least significant bits and the most significant bit.