

CS241

Andy Zhang

Fall 2014

# Contents

0.1	2's complement operation and 2s complement representation . . . . .	1
0.1.1	2's complement . . . . .	1
0.1.2	2's Representation . . . . .	1
0.1.3	Unsigned binary integer . . . . .	1
0.1.4	Signed . . . . .	1
0.1.5	Characters . . . . .	1

## 0.1 2's complement operation and 2s complement representation

### 0.1.1 2's complement

-4 ->3 bits, 2's complement:

1. Write down in unsigned binary
2. Invert the bits
3. Add 1

### 0.1.2 2's Representation

1 0 0  
0 1 1  
1 0 0

### 0.1.3 Unsigned binary integer

Hello  $1010_2 \Rightarrow 10_{10}$

### 0.1.4 Signed

2's Complement Integer — Perform the 2's complement operation

1 0 1 0  
0 1 0 1  
0 1 1 0

### 0.1.5 Characters

0001010 (8 bits)

1. Unsigned binary  $\# \Rightarrow (10)_{10}$
  2. 2's complement binary  $\# \Rightarrow (10)_{10}$
  3. '\n' (newline)
- ASCII  $\Rightarrow$  8 bits