

CS107 Quiz 3 Solution

This is a closed book, closed note, closed computer quiz. You have 10 minutes to complete it.

SUNet ID (@**stanford.edu**): _____

First and Last Name: _____

I accept the letter and spirit of Stanford's Honor Code.

[signed] _____

**Do not turn over until
instructed to do so.**

Problem 1: assign1 Takeaways [4 points total, 2 and 2]

- a. Assuming **b** is a **bool** and **byte** is an **unsigned char**, present an expression that sets **b** to **true** if and only if **byte**'s two most significant bits are **10**. You should rely on **&**, **==**, the constants **0x80** (**0b10000000**) and **0xC0** (**0b11000000**), and **nothing else**.

b = (byte & 0xC0) == 0x80 ;

- b. Assuming **width** and **k** are 32-bit **unsigned ints**, give an expression that initializes **k** to be **width** 0's followed by all 1's. Your expression can use bitwise operators and the constant **0U**, but arithmetic operators are **off limits**. Hint: How can you get 32 1's from **0U**?

k = ~0U >> width ;

Problem 2: C String Library Functions [6 points total, 2, 2, and 2]

What are the outputs of the following code snippets? Present outputs to the right of the code.

- a. Recall: **strcpy(dest,src)** copies C string from **src** to **dest**, includes **\0**

```
char veggie[8];
strcpy(veggie, "chicory");
strcpy(veggie + 3, "beet");
printf("%s\n", veggie);
```

chibeet

- b. Recall: **strncpy(dest,src,n)** copies at most **n** bytes, omits **\0** if **src** length $\geq n$

```
char woodwind[8];
strcpy(woodwind, "bassoon");
strncpy(woodwind + 1, "oboe", 4);
printf("%s\n", woodwind);
```

boboeon

- c. Recall: **strcmp** returns 0 if strings equal, **strstr/strchr** return pointer to first match

```
char city[16];
strcpy(city, "Walla Walla");
if (strcmp(city, city + 6) == 0)
    printf("%s\n", strstr(city, "la"));
else
    printf("%s\n", strchr(city, 'a'));
```

alla Walla