

## CSE 450 Operating Systems, Homework 1

Name: \_\_\_\_\_

Due Date: Jan 18<sup>th</sup>, 2016

**1:** A computer is built that uses 15 bits for integers and for addresses.

- How many bytes of memory can be addressed?
- What is the range of values for signed (two's complement) integers. We want the largest magnitude negative number, and largest magnitude positive number?

**2:** Describe two of the primary motivations for having Virtual Memory in the computer system.

**3:** Explain why virtual memory in a system without a Translation Lookaside Buffer will be much slower than physical memory?

For the following two questions, you are asked to program.

**4:** Describe what is wrong with the following function and propose modifications to fix it, submit with a test program and test results.

```
char *string_duplicator(char *s) {  
    char *cpy;  
    for (i=0;i<=strlen(s);i++) {  
        cpy[i]=s[i];  
    }  
    return(cpy);  
}
```

**5:** Please read the following code carefully to understand the function.

```
int test(char *s) {  
    int x = 0;  
    unsigned char c;  
    while (*s) {  
        c = *s;  
        while (c) {  
            if (c & 1) x++;  
            c = c >> 1;  
        }  
        s++;  
    }  
    return x;  
}
```

Please submit a testing program and test results together with a brief readme file describing what the main function of the function *test*.