**CSI 333 – Programming at the Hardware-Software Interface**

**Illustrating the use of `memset`, `memcpy` and `memcmp`**

**Handout 11.1**

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```
#include <stdio.h>
#include <string.h>

#define  SIZE  5

/* Example to illustrate memory functions (memset, memcpy and */
/* memcmp) in string.h.                                       */

int main(void) {

  int  a[SIZE], b[SIZE], i;
  char x[SIZE];

  /* Initialize the first SIZE-1 characters of x to 't'. */
  memset(x, 't', (size_t)SIZE-1);
  x[SIZE-1]  = '\0';  /* Add the terminating '\0'. */
  printf("String x is: %s\n", x);

  /* Put values into array a. */

  for (i = 0; i < SIZE; i++)
    a[i] = i;

  /* Copy array a into b using memcpy. Note that sizeof(a) */
  /* will correctly give the number of bytes to be copied. */

  memcpy(b, a, sizeof(a));
  for (i = 0; i < SIZE; i++)
    printf("b[%d] = %d\n", i, b[i]);
```

**(over)**

```
  /* Compare a and b using memcmp. */

  if (memcmp(a, b, sizeof(a)) == 0) {
     printf("The array contents are identical.\n");
  }
  else {
     printf("The array contents are NOT identical.\n");
  }

  /* Make a change to b and again compare a and b using memcmp. */

  b[SIZE-1] = 0;
  if (memcmp(a, b, sizeof(a)) == 0) {
     printf("The array contents are identical.\n");
  }
  else {
     printf("The array contents are NOT identical.\n");
  }
} /* End of main. */
```

**Output:**

```
String x is: tttt
b[0] = 0
b[1] = 1
b[2] = 2
b[3] = 3
b[4] = 4
The array contents are identical.
The array contents are NOT identical.
```