

# CSI 333 – Programming at the Hardware-Software Interface

## Some Examples of C Programs (continued)

### Handout 3.1

**Program Example 4:** The following program counts and prints the number of occurrences of each digit, of white space characters (i.e., space, tab or newline characters) and of all other characters.

```
#include <stdio.h>

/* Counts the number of occurrences of each digit, the number    */
/* of white space characters and the number of other characters. */

#define NUM_DIGITS 10

int main(void) {

    int  nwhite, nother, ndigit[NUM_DIGITS]; /* Counters. */
    int  c, i; /* Temporaries. */

    /* Initialize all counts to zero. */

    nwhite = nother = 0;
    for (i = 0; i < NUM_DIGITS; i++)
        ndigit[i] = 0;

    /* Read each character from input and increment the */
    /* appropriate counter.                               */

    while ((c = getchar()) != EOF) {
        switch (c) {

            /* Is it a digit? */

            case '0' :
            case '1' :
            case '2' :
            case '3' :
            case '4' :
            case '5' :
            case '6' :
            case '7' :
            case '8' :
            case '9' : ndigit[c-'0']++;
                       break;
        }
    }
}
```

(over)

```
    /* Is it a whitespace character? */

    case ' ' :
    case '\n' :
    case '\t' : nwhite++;
                break;

    /* Neither a digit nor a white space character. */

    default  : nother++;
                break;

} /* End of switch statement. */

} /* End of while loop */

/* Print the counts. */

printf("Digits = ");
for (i =0; i < NUM_DIGITS; i++)
    printf("%d ", ndigit[i]);

printf("\n White space = %d   Other = %d\n", nwhite, nother);

return 0;
} /* End of main. */
```