Exercise 0 *(6 points – 1 point per question – No program required)*

1. E
2. D
3. D
4. C
5. A
6. D

References and Explanations:

In addition to the course book references cited below, these topics are also covered in the live lectures (in-class students) and the recorded lectures (online students).

1. Note 1.5; A single quote between two single quotes is not a character literal. To represent a single quote as a character literal requires the following character sequence: single quote, backslash, single quote, single quote.

2. Note 1.5; A double quote between two double quotes is not a string literal. To represent a double quote as a string literal requires the following character sequence: double quote, backslash, double quote, double quote.

3. Note 1.5; *printf("\x49\146\155\155\x70\x0021")* uses a sequence of 6 octal and hexadecimal escape sequences to represent the values of the 6 ASCII characters *Ifmmp!* Representing the values of characters numerically is an extremely bad practice since which characters these values represent is both cryptic and non-portable.

4. Note 1.11; Only types **char**, **short**, and **int** are acceptable for *%d* in *printf*.

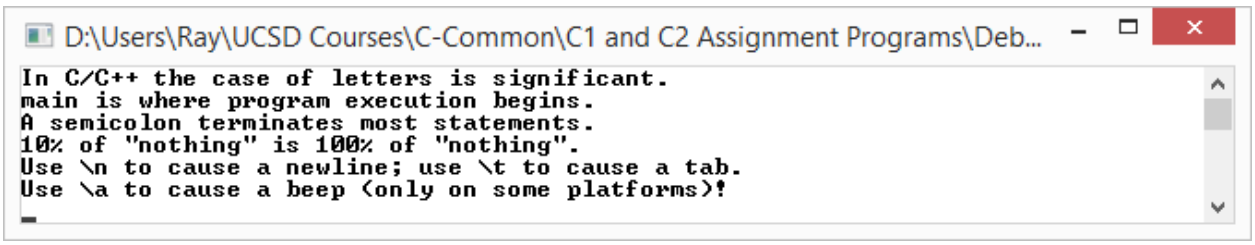
5. Note 1.13; Only type **int** is acceptable for *%d* in *scanf*.

6. Notes 1.15, 1.16; *%c* in *scanf* does not skip leading whitespace. Precede it with *\n* to accomplish this task. *getchar* and *cin.get* do not skip leading whitespace. *cin* >> always skips leading whitespace.

Exercise 1 *(7 points – C Program)*

```c
/************************** PREFERRED SOLUTION **************************/
/*       This solution uses macros to avoid the use of magic numbers.       */


/*
 * ...the usual title block Student/Course/Assignment/Compiler information goes here...
 *
 * This file contains function main, which displays various strings using a
 * single call to printf.
 */

#include <stdio.h>
#include <stdlib.h>

#define FIRST_PERCENT 10
#define SECOND_PERCENT 100

/*
 * Display various strings using a single call to printf.  Note that \\ is
 * used to represent a \ in any string literal.  Also note that in a printf
 * control string %% is used to print a %
 */
int main(void)
{
   printf(
      "In C/C++ the case of letters is significant.\n"
      "main is where program execution begins.\n"
      "A semicolon terminates most statements.\n"
      "%d%% of \"nothing\" is %d%% of \"nothing\".\n"
      "Use \\n to cause a newline; use \\t to cause a tab.\n"
      "Use \\a to cause a beep (only on some platforms)!\n",
      FIRST_PERCENT, SECOND_PERCENT);

   return EXIT_SUCCESS;
}
```

C1A1E1 Screen Shot

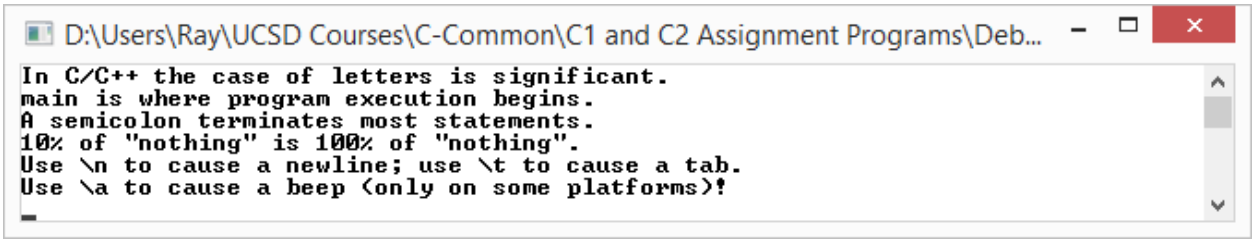


See the next page for an inferior solution…

Exercise 1 *(7 points – C Program, continued)*

```c
/*************************** INFERIOR SOLUTION ****************************/
/*               This solution embeds magic numbers in string              */
/*               literals and is an example of what NOT to do.             */


/*
 * ...the usual title block Student/Course/Assignment/Compiler information goes here...
 *
 * This file contains function main, which displays various strings using a
 * single call to printf.
 */

#include <stdio.h>
#include <stdlib.h>

/*
 * Display various strings using a single call to printf.  Note that \\ is
 * used to represent a \ in any string literal.  Also note that in a printf
 * control string %% is used to print a %
 */
int main(void)
{
   printf(
      "In C/C++ the case of letters is significant.\n"
      "main is where program execution begins.\n"
      "A semicolon terminates most statements.\n"
      "10%% of \"nothing\" is 100%% of \"nothing\".\n"
      "Use \\n to cause a newline; use \\t to cause a tab.\n"
      "Use \\a to cause a beep (only on some platforms)!\n");

   return EXIT_SUCCESS;
}
```

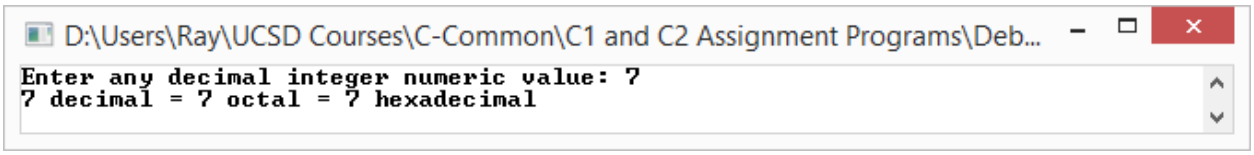
C1A1E1 Screen Shot

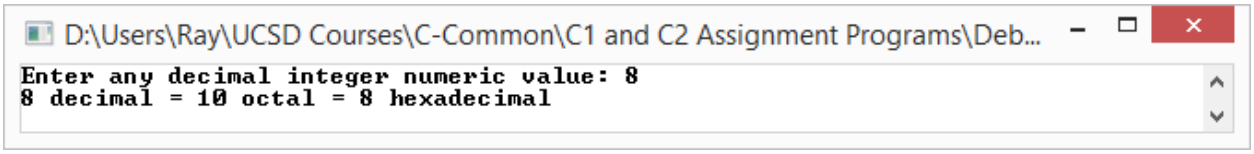


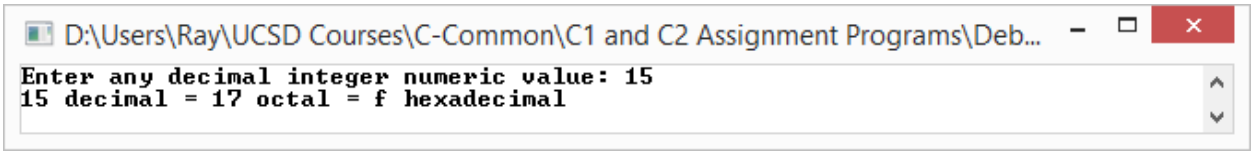
Exercise 2 *(7 points – C++ Program)*

```
//
// ...the usual title block Student/Course/Assignment/Compiler information goes here...
//
// This file contains function main, which displays a user-prompted decimal
// integer value in decimal, octal, and hexadecimal.
//

#include <iostream>
#include <cstdlib>
using std::cin;
using std::cout;
using std::dec;
using std::hex;
using std::oct;

//
// Display a user-prompted decimal integer value in decimal, octal, and
// hexadecimal.
//
int main()
{
   /* Prompt the user for input and read it. */
   cout << "Enter any decimal integer numeric value: ";
   int val;
   cin >> val;
   // Display the value in decimal, octal, and hexadecimal.
   cout << dec << val << " decimal = " << oct << val << " octal = "
      << hex << val << " hexadecimal\n";

   return EXIT_SUCCESS;
}
```

C1A1E2 Screen Shots







C1A1E2 Screen Shots continue on the next page...

C1A1E2 Screen Shots, continued