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X52.9008 – 01

Tues 6:30-9:00PM

June 8, 2010

HW # 3 --Chapter 5 #2, 4, 6, 11

Chapter 6 #2, 3, 6

5.2. Write a program to generate and display a table of *n* and *n*2, for integer values of *n* ranging from1 to 10. Be certain to print appropriate column headings.

#include <stdio.h>

int main (void)

{

int n, n2;

printf("Table of Squares\n\n");

printf(" n N^2\n");

printf("--- ---\n");

n2 = 0;

for (n = 1; n <= 10; n++) {

n2 = n \* n;

printf (" %2i %3i\n", n, n2);

}

return 0;

}

5.4. The factorial of an integer *n*, written *n!*, is the product of the consecutive integers *1* through *n*. For example, 5 factorial is calculated as

5! = 5 x 4 x 3 x 2 x1 = 120

Write a program to generate and print a table of the first 10 factorials.

#include <stdio.h>

int main (void)

{

int n, n2, n3;

printf("Table of Factorials\n\n");

printf(" n n!\n");

printf("--- ---\n");

n = 1;

n2 = n;

printf (" %2i %7i\n", n, n2);

n = 2;

n2 = n \* (n - 1);

printf (" %2i %7i\n", n, n2);

n = 3;

n2 = n \* (n - 1) \* (n - 2);

printf (" %2i %7i\n", n, n2);

n = 4;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3);

printf (" %2i %7i\n", n, n2);

n = 5;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4);

printf (" %2i %7i\n", n, n2);

n = 6;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4) \* (n - 5);

printf (" %2i %7i\n", n, n2);

n = 7;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4) \* (n - 5) \* (n - 6);

printf (" %2i %7i\n", n, n2);

n = 8;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4) \* (n - 5) \* (n - 6) \* (n - 7);

printf (" %2i %7i\n", n, n2);

n = 9;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4) \* (n - 5) \* (n - 6) \* (n - 7) \* (n - 8);

printf (" %2i %7i\n", n, n2);

n = 10;

n2 = n \* (n - 1) \* (n - 2) \* (n - 3) \* (n - 4) \* (n - 5) \* (n - 6) \* (n - 7) \* (n - 8) \* (n - 9);

printf (" %2i %7i\n", n, n2);

return 0;

}

5.6. A minus sign placed in front of a field width specification causes the field to be displayed *left-justified.* Substitute the following printf statement for the corresponding statement in Program 5.2, run the program, and compare the outputs produced by both programs.

printf (“%-2i %i\n”, n, triangularNumber);

There is no space in front of the n column numbers (Left-Justified). The 55 is lined up with the rest of the numbers in the second column.

5.11. Write a program that calculates the sum of the digits of an integer. For example, the sum of the digits of the number 2155 is 2 + 1 + 5 + 5 or 13. The program should accept any arbitrary integer typed in by the user.

6.2. Write a program that asks the user to type in two integer values at the terminal. Test these two numbers to determine if the first is evenly divisible by the second, and then display an appropriate message at the terminal.

6.3. Write a program that accepts two integer values typed in by the user. Display the result of dividing the first integer by the second, to three-decimal-place accuracy. Remember to have the program check for division by zero.

6.6. Write a program that takes an integer keyed in from the terminal and extracts and displays each digit of the integer in English. So, if the user types in 932, the program should display

nine three two

Remember to display “zero” if the user types in just a 0. (*Note:* This exercise is a hard one!)