**Talen Phillips**

**EE 107-1**

**Homework 1**

**Due 4 Feb 13**

**1) Which of the following identifiers are a) reserved words, b) function (or macro) names, c) other valid identifiers?**

**void, return, MAX\_ENTRIES, double, G, printf, part#2, xyz123**

**"double", "void", "return",** and **"printf"** are all reserved words in C

**"G"** and **"xyz123"** are all unreserved and use characters that are valid in function (or macro) names.

**"MAX\_ENTRIES"** may be a valid identifier, but because of its formatting, it may also be reserved by a header file.

**part#2** isn't a valid identifier, because "#" isn't a valid character in a function name.

**2) Indicate which of the following are valid type *int*, *double* or *char* values in C and which are not. Identify the data type for the valid items.**

**‘PQR’, 15E-2, 35, ‘h’, -37.491, 0.912, 4719, ‘true’, “T”, &, 4.5e3, ‘$’**

**35** and **4719** are the only valid int values.

**15E-2, -37.491, 0.912, and 4.5e3** are all valid double values, although they could also be float values.

**‘h’** and **‘$’** are valid char values.

**“T”** is a string because of its double quotation marks.

**‘true’** is a \_Bool (boolean) value.

I'm unsure what **‘PQR’** is. It probably just invalid.

**3) Consider the following program:**

**#include <stdio.h>**

**#define f 120**

**#define B 260**

**int main(void)**

**{**

**printf("An apple\n a day\n keeps the ");**

**printf("doctor ");**

**return 0;**

**printf("away!\n");**

**printf("A \n B");**

**}**

**(a) Identify the directives and statements in this program.**

**(b) What output does the program produce?**

a) **#include** is a directive that brings code from a header file into the program.

**#define** assigns a value to a user defined name.

**int main** is a function with an integer output, named main.

**(void)** indicates that there are no arguments for this function.

The **printf** statements are functions that display information on the screen.

The **return** statement causes the program to exit the function and return a value (or no value as in this case).

b) Since the return statement is located halfway through the function, the program will only execute the first two printf functions. The output should look like this:

**An apple**

**a day**

**keeps the doctor**

**4) Write a program that uses printf() to display the powers of ten from 1 to 10e6 in a column in integer format with the numbers right-justified in the column**

Note: I have assumed that this problem is NOT asking for program to display the numbers 101 to 1010e6 in integer format.

*/\* Talen Phillips*

*"Powers of 10"*

*03FEB2013*

*Description: This program displays the powers of ten from 1 to 10e6*

*as integers in a right-justified column. \*/*

**#include <stdio.h>**

**void PowersOfTen (int n)**

*/\* I've used one function to execute a while loop*

*that multiplies 10 times itself "n" times, and*

*then print the result to the screen in a message. \*/*

**{**

**double i=1,p=1;** */\* defining variables for the loop.*

*"double" is used here because I was*

*experimenting with higher exponents*

*of 10 the program is still limited*

*to about 10^22. \*/*

**while(i<=n)**  */\* setting limits on the loop \*/*

**{**

**p=p\*10;** */\* the actual operation \*/*

**i++;**  */\* incrementing \*/*

**}**

**printf ("10 to the power of %2i is:%25.0f.\n",n,p);**

*/\* printing the final result \*/*

**return;**

**}**

**int main (void)**

*/\* The second function (in this case the main function)*

*is another while loop that executes the first function*

*a set number of times.*

*As mentioned in the previous function, the program is*

*limited to 10^22, so looping this function more than*

*22 times will cause unexpected results. \*/*

**{**

**int j=0;**  */\* defining variables for the loop \*/*

**while(j<=6)** */\* setting limits on the loop \*/*

**{**

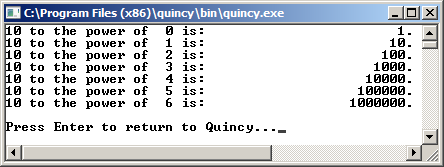
**PowersOfTen (j);** */\* the actual operation \*/*

**j++;**  */\* incrementing \*/*

**}**

**return 0;**

**}**

****