Talen Phillips

EE 107-01

Homework 4

Due 4 Mar 13

1) Write a program that calculates how many digits a number contains. For example:

Enter a number: 374

The number 374 has 3 digits.

Assume the number has no more than four digits.

/\* Talen Phillips

\* EE107-01

\* 04MAR2013

\* "Digit Counter"

\*/

#include <stdio.h>

int main(void)

{

int n;

short int cnt=1;

printf("Enter a number:\n");

scanf("%i", &n);

**/\* Since the input is altered,**

**\* it needs to be printed first: \*/**

printf("The number %i has", n);

**/\* This is an absolute value function to**

**\* avoid issues with negative numbers: \*/**

if (n<0) n=-n;

**/\* This loop divides by 10 until the value**

**\* is 10 or less, and counts the iterations. \*/**

while (n>=10)

{

n = n / 10;

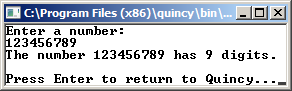
cnt++;

}

printf(" %i digits.\n", cnt);

return 0;

}



2) In one state, single residents are subject to the following income tax:

Income Amount of Tax

Not over $750 1% of income

$750-$2250 $7.50 + 2% of amount over $750

$2250-$3750 $37.50 + 3% of amount over $2250

$3750-$5250 $82.50 + 4% of amount over $3750

$5250-$7000 $142.50 + 5% of amount over $5250

Over $7000 $230.00 + 6% of amount over $7000

Write a program that asks the user to enter the amount of taxable income, then displays the tax due.

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\* 04MAR2013

\* "Tax Calculator"

\*/

#include <stdio.h>

int main (void){

int income;

printf("Enter your income:\n");

scanf("%d", &income);

**// Each of the following if statements represents one of the tax brackets.**

**// Each statement executes a printf that contains the equation for that bracket.**

if (income < 0) printf("Income cannot be negative!\nTax due: $0.00");

if ((income >= 0) && (income < 750)) printf("Tax due: $%0.2f", income \* 0.01);

if ((income >= 750) && (income < 2250)) printf("Tax due: $%0.2f", 7.5 + (income-750) \* 0.02);

if ((income >= 2250) && (income < 3750)) printf("Tax due: $%0.2f", 37.5 + (income-2250) \* 0.03);

if ((income >= 3750) && (income < 5250)) printf("Tax due: $%0.2f", 82.5 + (income-3750) \* 0.04);

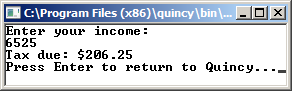
if ((income >= 5250) && (income < 7000)) printf("Tax due: $%0.2f", 142.5 + (income-5250) \* 0.05);

if (income >= 7000) printf("Tax due: $%0.2f", 230 + (income-7000) \* 0.06);

return 0;

}

I'm sorry for the word wrapping issues, but even at small fonts, it remains an issue.



3) Write a program that finds the largest and smallest of four integers entered by the user. For example:

Enter four integers: 21 43 10 35

Largest: 43

Smallest: 10

Use only four “if” statements.

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\* 04MAR2013

\* "Min/Max identifier"

\*/

#include <stdio.h>

int main (void)

{

int w, x, y, z, min, max, min1, max1, min2, max2;

printf("Enter four integers:\n");

scanf ("%d %d %d %d", &w, &x, &y, &z);

if (w > x){ **//compare the first pair of variables.**

max1 = w;

min1 = x;

}

else{

max1 = x;

min1 = w;

}

if (y > z){ **//compare the second pair of variables.**

max2 = y;

min2 = z;

}

else{

max2 = z;

min2 = y;

}

if (min1 < min2) min = min1; **// Compare the results of**

else min = min2; **// the earlier comparisons**

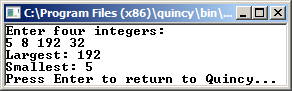
if (max1 > max2) max = max1; **// to set an absolute max**

else max = max2; **// and min.**

printf ("Largest: %d\nSmallest: %d", max, min);

return 0;

}



4) Write a program that prompts the user to enter two dates and then indicates which date comes earlier on the calendar. For example:

Enter first date (mm/dd/yy): 3/6/08

Enter second date (mm/dd/yy): 5/17/07

5/17/07 is earlier than 3/6/08

Submit your code and a screenshot of your code execution. Do not forget to use comments and the comment header as described in class.

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\* 04MAR2013

\* "Date Sorter"

\*/

#include <stdio.h>

int main (void){

int m1, d1, y1, m2, d2, y2, date1, date2;  
**// The date1 and date2 variables are used for comparison.**

printf("Enter first date (mm/dd/yy): ");   
**// Nothing is stopping the user from using a 4 digit year.**

scanf("%d/%d/%d", &m1, &d1, &y1);

printf("Enter second date (mm/dd/yy): ");

scanf("%d/%d/%d", &m2, &d2, &y2);

**// The following two lines convert dates into one unit (days) for comparison.**

date1 = d1 + (31 \* m1) + (365 \* y1);

date2 = d2 + (31 \* m2) + (365 \* y2);

**// The following if statements compare the dates and print correct output.**

if (date1 < date2) printf("%02d/%02d/%02d is earlier than %02d/%02d/%02d.", m1, d1, y1, m2, d2, y2);

if (date2 < date1) printf("%02d/%02d/%02d is earlier than %02d/%02d/%02d.", m2, d2, y2, m1, d1, y1);

if (date2 == date1) printf("These dates are the same!");

return 0;

**/\* Note: If a two digit year is used, the program assumes that both dates will be during the same century. If a 4 digit year is entered, the output will also include 4 digit years. \*/**

}

