

UNIVERSITY OF PORTSMOUTH

FACULTY OF TECHNOLOGY

Department of Electronic and Computer Engineering

B142L – Introduction to Computing

U13746

Date: 14 July 2008

Time: 11:15 – 13:15

INSTRUCTIONS

Write your student ID number clearly on page 2.

Write your answers to all 10 questions within the spaces provided in this examination paper.

Handwritten notes are permitted with this examination.

Calculators permitted are:

Casio FX 85WA

Casio FX 83WA

Casio FX 85MS

Examiner:

Professor Ron Pethig, Chi Nguyen

Student ID Number

QUESTION 1

Modify the following source code to correct all errors. Line numbers have been provided for reference. Indicate specific line numbers in your answers when necessary. **[10 Marks]**

```
01: int main( void )
02: {
03:     int "car";
04:     double mileage;
05:     char summary{ 64 } = '\0';
06:
07:     car = "5";
08:     mileage = 250.70;
09:     sprintf( summary, "%c %m", car mileage );
10:     printf( "%s\n", summary );
11: }
```

QUESTION 2

- a) Place an "X" in the box next to **3 terms** that are most directly related to the use of **selection and decisions** in a C program. [3 Marks]

<input type="checkbox"/>	variable
<input type="checkbox"/>	index
<input type="checkbox"/>	else
<input type="checkbox"/>	and
<input type="checkbox"/>	int

<input type="checkbox"/>	if
<input type="checkbox"/>	type
<input type="checkbox"/>	local
<input type="checkbox"/>	return
<input type="checkbox"/>	parameter

- b) Write a C program that **accepts an input number** and displays a message that it is a **valid** (e.g. **1 to 12**) or **invalid month number**. Show or use all the terms selected in part (a). [7 Marks]

QUESTION 3

Modify the following source code to correct all errors. The program is intended to **display numbers in the range of 40 to 500 (inclusive) which are multiples of both 5 and 6.** Line numbers have been provided for reference. Indicate specific line numbers in your answers when necessary. **[10 Marks]**

```
01: int main( void )
02: {
03:     int counter = 0;
04:
05:     do
06:     {
07:         if ( ( ( counter % 5 ) == 0 ) || ( ( counter % 6 ) == 0 ) )
08:             printf( "%d ", counter % 5 );
09:
10:         counter = counter + 6;
11:     } while ( counter < 500 );
12: }
```

QUESTION 4

- a) Place an "X" in the box next to **3 terms** that are most directly related to the use of **iterative loops** in a C program. [3 Marks]

<input type="checkbox"/>	key
<input type="checkbox"/>	body
<input type="checkbox"/>	printf
<input type="checkbox"/>	stderr
<input type="checkbox"/>	element

<input type="checkbox"/>	for
<input type="checkbox"/>	void
<input type="checkbox"/>	initialization
<input type="checkbox"/>	allocation
<input type="checkbox"/>	format

- b) Write a C program that uses **an iterative loop to display all multiples of 3 starting at 600 and decreasing to zero**. Show or use all the terms selected in part (a). [7 Marks]

QUESTION 5

Consider the following source code. Line numbers have been provided for reference. Indicate specific line numbers in your answers when necessary.

```
01: void color( int );
02:
03: int main( void )
04: {
05:     int number = 1;
06:
07:     while ( number != 0 )
08:     {
09:         scanf( "%d", &number );
10:         color( number );
11:     }
12: }
13:
14: void color( int input )
15: {
16:     if ( input >= 10 )
17:         printf( "Red " );
18:     if ( input >= 20 )
19:         printf( "Blue " );
20:     if ( input <= 30 )
21:         printf( "Green " );
22:     if ( input <= 40 )
23:         printf( "Orange " );
24: }
```

a) List the program output when the **input value is 20**.

[3 Marks]

b) Describe **input values** that would produce **output of "Green Orange"**.

[7 Marks]

QUESTION 6

Consider the following source code. Line numbers have been provided for reference. Indicate specific line numbers in your answers when necessary.

```
01: int main( void )
02: {
03:     int counter;
04:     int marks[ 12 ] = { 0 };
05: }
```

- a) Modify the source code to **accept and store 12 input marks in the array**. [4 Marks]

- b) Modify the source code to **accept and store 12 input marks in the array only if the input values are within the range of 0 to 100, inclusive**. [6 Marks]

QUESTION 7

a) Place an "X" in the box next to **3 terms** that are most directly related to the use of **text strings** in a C program. **[3 Marks]**

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

cast
true
char
length
binary

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

assignment
default
double
sizeof
array

b) Write a C program that **accepts an input text string** and **displays it to screen except for the letter 'z'**. Show or use all the terms selected in part (a). **[7 Marks]**

QUESTION 8

Write a C program that **accepts 5 input text strings** and **displays a message to indicate whether there are duplicate input strings.**

[10 Marks]

QUESTION 9

- a) Place an "X" in the box next to **3 terms** that are most directly related to the use of **data files** in a C program. **[3 Marks]**

<input type="checkbox"/>	stdin
<input type="checkbox"/>	stdout
<input type="checkbox"/>	stderr
<input type="checkbox"/>	file array
<input type="checkbox"/>	file pointer

<input type="checkbox"/>	end of file
<input type="checkbox"/>	start of file
<input type="checkbox"/>	scan mode
<input type="checkbox"/>	read mode
<input type="checkbox"/>	delete mode

- b) Write a C program that **saves the string "Hello world"** to a **data file named "output.txt"** located in the same directory. Show or use all the terms selected in part (a). **[7 Marks]**

QUESTION 10

Consider the following source code. Line numbers have been provided for reference. Indicate specific line numbers in your answers when necessary.

```
01: double kilometers( double );  
02:  
03: int main( void )  
04: {  
05: }
```

- a) Modify the source code to **define the kilometers() function** that converts **input number of miles** into an **equivalent number of kilometers**. Use this formula:

$$1 \text{ mile} = 1.609 \text{ kilometer}$$

[5 Marks]

- b) Modify the source code to **accept an input number of miles** and **display the output of the kilometers() function**.

[5 Marks]