FETAC
Further Education and Training Awards Council
Comhairle na nDámhachtainí Breisoideachais agus Oiliúna

***(National Council for Vocational Awards)***

# Computer Programming C20013

## Theory Examination 2003

# Duration: Two Hours

**INSTRUCTIONS TO CANDIDATES:**

*Answer any **three** questions*

*All questions carry equal marks*

*Return this exam/answer paper when finished*

*Extra paper is available from the exam supervisor if required*

**This written exam counts as 40% of the total module**

# Marking Scheme

## *Question 1. Total 40 marks.*

(a) This program contains 5 errors that will stop it from compiling. List the errors. ***20 marks***

```
#include <stdio.H>
main ()
{
 int looper;
 printf ("These are the first 10 squared numbers:\n);
 loopy = 1;
 while (looper <= 10)
 {
  printf ("%d\n", looper * looper)
  looper++;
 }
}
}
```

| | |
|---|---|
| **1** | 4 marks |
| | |
| **2** | 4 marks |
| | |
| **3** | 4 marks |
| | |
| **4** | 4 marks |
| | |
| **5** | 4 marks |
| | |

(b) What is a variable used for? ***10 marks***

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(c) What is the difference between a character and a string variable? ***10 marks***

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

## *Question 2. Total 40 marks.*

(a) What type of numeric data should not be stored in the **int** data type? What data type should be used instead? ***10 marks***

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(b) Write the general form of the **if** statement: ***10 marks***

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

(c) Write a C program containing a loop that writes out the odd numbers between 9 and 99 ***20 marks***

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

## *Question 3. Total 40 marks.*

(a) Draw a diagram to represent the state of the **numbers** array after this program finishes. ***30 marks***

```
#include <stdio.h>
main ()
{
 int numbers[9], loopvar;
 loopvar = 0;
 while (loopvar <= 9)
 {
  numbers[loopvar] = 100 - (loopvar * loopvar);
  if (loopvar == 5)
  {
   numbers[loopvar] = 0;
  }
  loopvar++;
 }
}
```

Draw your diagram here:

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

(b) What numeric screen output is generated by this program line: ***10 marks***

```
printf ("%d\n",'H'+'w');
```

Unsatisfactory: 0; Unclear: 6, 7; Correct: 10;

## *Question 4. Total 40 marks.*

(a) Write a C loop to read in an array of 20 numeric variables; then write another loop to write out the contents of the array in reverse order. Also write out the total sum of all the values in the array. ***30 marks***

Unsatisfactory: 0-9; Imperfect: 10-19; Largely Correct: 20-30;

(b) The control variable for a **while** loop should appear in a program not less than four times. List those times. ***10 marks***

| | |
|---|---|
| **1** | 2.5 marks |
| **2** | 2.5 marks |
| **3** | 2.5 marks |
| **4** | 2.5 marks |

***Figure 1. The ASCII table.***

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 032 | SP | 033 | ! | 034 | " | 035 | # |
| 036 | $ | 37.00% | | 038 | & | 039 | ' | 040 | ( | 041 | ) |
| 042 | * | 043 | + | 044 | , | 045 | - | 046 | . | 047 | / |
| 048 | 0 | 049 | 1 | 050 | 2 | 051 | 3 | 052 | 4 | 053 | 5 |
| 054 | 6 | 055 | 7 | 056 | 8 | 057 | 9 | 058 | : | 059 | ; |
| 060 | < | 061 | = | 062 | > | 063 | ? | 064 | @ | 065 | A |
| 066 | B | 067 | C | 068 | D | 069 | E | 070 | F | 071 | G |
| 072 | H | 073 | I | 074 | J | 075 | K | 076 | L | 077 | M |
| 078 | N | 079 | O | 080 | P | 081 | Q | 082 | R | 083 | S |
| 084 | T | 085 | U | 086 | V | 087 | W | 088 | X | 089 | Y |
| 090 | Z | 091 | [ | 092 | \ | 093 | ] | 094 | ^ | 095 | _ |
| 096 | ` | 097 | a | 098 | b | 099 | c | 100 | d | 101 | e |
| 102 | f | 103 | g | 104 | h | 105 | i | 106 | j | 107 | k |
| 108 | l | 109 | m | 110 | n | 111 | o | 112 | p | 113 | q |
| 114 | r | 115 | s | 116 | t | 117 | u | 118 | v | 119 | w |
| 120 | x | 121 | y | 122 | z | 123 | { | 124 | \| | 125 | } |
| 126 | ~ | 127 | | | | | | | | | |
| Printable alphanumeric and punctuation characters used in normal document text | | | | | | | | | | | |