Version 1.0

General Certificate of Education
Advanced Subsidiary
Specimen Pre-release material for 2009 and 2010
Month Year

COMPUTING

COMP1/PR Problem Solving, Programming, Data Representation and Practical Exercise

Date Time

Pre-release material – Instructions for Candidates: Program Language C#

To be given to candidates on or after 1 April XXXX

Information

- There are 2 parts to this pre-release material:
  - Section A: Skeleton Program
  - Section B: Test Data.
- This material will be re-printed in the examination paper.
- You are advised to familiarise yourself with this material before the examination.
- You will use both the program and test data in the examination and your teacher will provide you with access to these electronically at the start of the examination.
- You can view/download this material on the AQA Website: www.aqa.org.uk/xxxxxx

SECTION A – Skeleton Program

```
 Line     Program statements
Number
   1     // AQA Pre-release Material for COMP1 – C# (Console mode)
   2     // Written by the COMP1 Principal Examiner Team
   3     // developed with the Microsoft Visual C# 2005 Express Edition
   4     //
   5     // Completed by:
   6     // Candidate No:
   7     // Centre No:
   8     //
   9     // Some statements are incomplete
  10     // and therefore do not do what they should do
  11     //
  12     // This program is designed to
  13     //     Accept a users menu choice to
  14     // 1 - Read in a single hexadecimal number
  15     //      and display the binary equivalent
  16     // 2 – Read in a file of hexadecimal numbers and
  17     //     produce a text file of their binary equivalent
  18     // 3 – Display the contents of a text file
  19     // 4 – Finish running the program
  20
  21     using System;
  22     using System.IO;
  23     using System.Collections.Generic;
  24     using System.Text;
  25
  26     namespace AQAProgram
  27     {
  28       class Program
  29       {
  30
  31         static void Main(string[] args)
  32         {
  33           int choice = 0;
  34           Boolean finished = false;
  35           ShowMenu();
  36           GetResponse(ref choice);
  37           switch (choice)
  38           {
  39             case 1: ConvertNumber(); break;
  40             case 2: ConvertFile(); break;
  41             case 3: DisplayFile(); break;
  42             case 4:                break;     // end program
  43
  44           }
  45           Console.ReadLine();
  46         } // end of main
  47
  48         static void ShowMenu()
  49         {
  50           Console.WriteLine("Please choose an option");
  51           Console.WriteLine();
  52           Console.WriteLine("1 : Convert a Hex number to Binary");
  53           Console.WriteLine("2 : Convert a text file of Hex Numbers");
  54           Console.WriteLine("3 : Display text file");
  55           Console.WriteLine("4 : Exit program");
  56         } // end of ShowMenu
```

```
57
58          static void GetResponse(ref int response)
59          {
60            Console.Write("Enter option number: ");
61            string responseLine = Console.ReadLine();
62            response = System.Convert.ToInt16(responseLine);
63          } // end of GetResponse
64
65          static string Binary(string hex)
66          {
67            int hexDigit, noOfHexDigits;
68            char thisHexDigit;
69            string binaryEquivalent = "";
70            string result = "";
71            noOfHexDigits = hex.Length;
72            for (hexDigit = 0; hexDigit < noOfHexDigits; hexDigit++)
73            {
74              thisHexDigit = hex[hexDigit];
75              if ((thisHexDigit >= '0' && thisHexDigit <= '9') ||
76                  (thisHexDigit >= 'A' && thisHexDigit <= 'F'))
77              {
78                switch (thisHexDigit)
79                {
80                  case '0': binaryEquivalent = ""; break;
81                  case '1': binaryEquivalent = ""; break;
82                  case '2': binaryEquivalent = ""; break;
83                  case '3': binaryEquivalent = ""; break;
84                  case '4': binaryEquivalent = ""; break;
85                  case '5': binaryEquivalent = ""; break;
86                  case '6': binaryEquivalent = ""; break;
87                  case '7': binaryEquivalent = ""; break;
88                  case '8': binaryEquivalent = ""; break;
89                  case '9': binaryEquivalent = ""; break;
90                  case 'A': binaryEquivalent = ""; break;
91                  case 'B': binaryEquivalent = ""; break;
92                  case 'C': binaryEquivalent = ""; break;
93                  case 'D': binaryEquivalent = ""; break;
94                  case 'E': binaryEquivalent = ""; break;
95                  case 'F': binaryEquivalent = ""; break;
96                }
97              }
98              //else ;
99              result = result + binaryEquivalent;
100           }
101           return result;
102         } // end of Binary
103
104         static void ConvertNumber()
105         {
106           string hexadecimal, converted;
107           Console.Write("Enter a Hexadecimal number: ");
108           hexadecimal = Console.ReadLine();
109           converted = Binary(hexadecimal);
110           Console.WriteLine(converted);
111         } // end of ConvertNumber
112
113         static void ConvertFile()
114         {
115           string fileNameIn = "C:/HexData.txt";
116           string hexNumber, binaryNumber;
117           TextReader hexFile = new StreamReader(fileNameIn);
118           while ((hexNumber = hexFile.ReadLine()) != null)
119           {
```

```
120             binaryNumber = Binary(hexNumber);
121             Console.WriteLine(binaryNumber);
122           }
123           hexFile.Close();
124           Console.WriteLine();
125         } // end of ConvertFile
126
127         static void DisplayFile()
128         {
129           string fileName = "C:/BinaryData.txt";
130           string bit;
131           TextReader binaryFile = new StreamReader(fileName);
132           while ((bit = binaryFile.ReadLine()) != null)
133           {
134             Console.WriteLine(bit);
135           }
136           binaryFile.Close();
137           Console.WriteLine();
138         } // end of Display File
139       }
140     }
```

SECTION B – Test Data

000000000000
000001110000
000010000100
000010001000
000001110000
001000100010
000100100100
000010101000
000001110000
000000100000
000000100000
000000100000
000001010000
000010001000
000100000100

END OF PRE-RELEASE MATERIAL