A

GCSE

COMPUTER SCIENCE

Paper 1 Computational thinking and programming skills – VB.NET

8525/1C

Diagram Booklet

[Turn over]

FIGURE 1

```
country ← 'United States of America'
state ← 'California'
city ← 'San Francisco'
landmark ← 'Alcatraz Island'
```

FIGURE 2

```
1    again ← True
2    WHILE again = True
3        a ← USERINPUT
4        IF a > 0 THEN
5            counter ← 0
6            WHILE a > 0
7                a ← a DIV 3
8                counter ← counter + 1
9            ENDWHILE
10       ELSE
11           again ← False
12       ENDIF
13       OUTPUT a
14   ENDWHILE
```

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[Turn over]

FIGURE 3

```
Function calculate(width As Integer, length As Integer,
height As Integer) As Integer
   If height = -1 Then
      Return width * length
   Else
      Return width * length * height
   End If
End Function

Sub Main()
   Dim numOne, numTwo, numThree, answer As Integer
   Console.Write("Enter width: ")
   numOne = Console.ReadLine()
   Console.Write("Enter length: ")
   numTwo = Console.ReadLine()
   Console.Write("Enter height, -1 to ignore:")
   numThree = Console.ReadLine()

   answer = calculate(numOne, numTwo, numThree)
```

```
    If numThree = -1 Then
       Console.WriteLine($"Area {answer}")
    Else
       Console.WriteLine($"Volume {answer}")
    End If
End Sub
```

[Turn over]

FIGURE 4

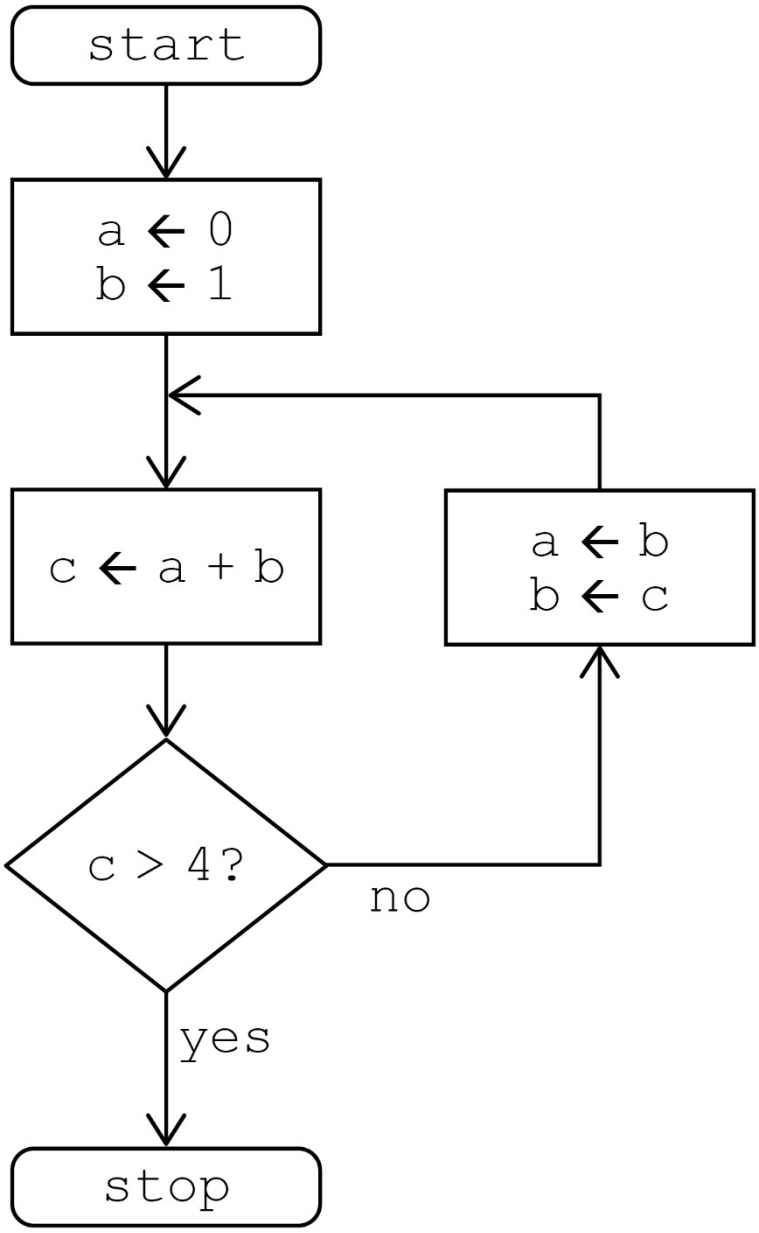


FIGURE 5

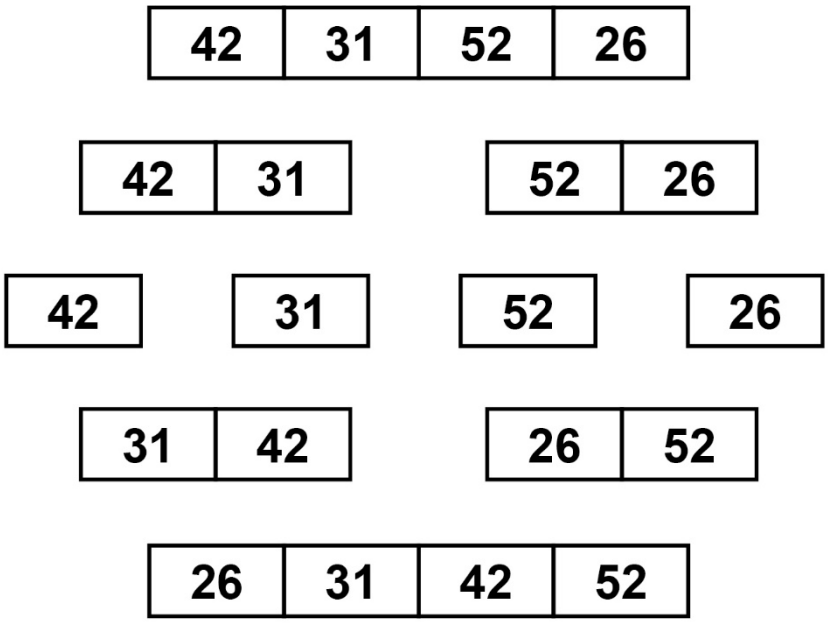
```
login ← False
REPEAT
    username ← ''
    WHILE username = ''
        OUTPUT 'Enter username: '
        username ← L1
    ENDWHILE
    password ← ''
    WHILE password = ''
        OUTPUT 'Enter password: '
        password ← USERINPUT
    ENDWHILE
    storedPassword ← getPassword( L2 )
    IF storedPassword = L3 THEN
        OUTPUT ' L4 '
    ELSE
        IF password = storedPassword THEN
            login ← True
        ELSE
            OUTPUT 'Try again.'
        ENDIF
    ENDIF
UNTIL login = True
OUTPUT 'You are now logged in.'
```

[Turn over]

FIGURE 6

-1	OUTPUT	0
username	True	SUBROUTINE
1	User not found	''
USERINPUT	password	Wrong password

FIGURE 7



[Turn over]

FIGURE 8

```
RECORD Film
    title : String
    certificate : String
    year : Integer
    beingShown : Boolean
ENDRECORD

hulk ← Film('Hulk', '12A', 2005, False)
ironMan ← Film('Iron Man', '12A', 2008, False)
antMan ← Film('Ant-Man', '12A', 2015, False)
filmCollection ← [antMan, hulk, ironMan]
year ← 0
position ← 0
```

```
FOR i ← 0 TO L1
   IF filmCollection[i].year > year THEN
      year ← filmCollection[i].year
      position ← i
   ENDIF
ENDFOR

OUTPUT filmCollection[position].title, ' is the
newest film'
```


[Turn over]

FIGURE 9

```
1    names ← ['Natalie', 'Alex', 'Roshana']
2    scores ← [78, 81, 72, 27, 51, 54, 52, 55, 59]
3    count ← 0
4    FOR i ← 0 TO 2
5        person ← names[i]
6        OUTPUT 'Student: ', person
7        FOR j ← 0 TO 1
8            OUTPUT j + 1
9            result ← scores[i * 3 + j]
10           OUTPUT result
11           count ← count + 1
12       ENDFOR
13   ENDFOR
```

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[Turn over]

FIGURE 10

```
1     validChoice ← False
2     REPEAT
3        difference ← -1
4        OUTPUT 'Enter a start year '
5        startYear ← USERINPUT
6        OUTPUT 'Enter an end year '
7        endYear ← USERINPUT
8        IF startYear ≥ endYear THEN
9           OUTPUT 'Start year must be before end year'
10       ELSE
11          IF startYear < 2000 THEN
12             OUTPUT 'Start year must be before 2000'
13          ELSE
14             validChoice ← True
15          ENDIF
```

```
16      ENDIF
17  UNTIL validChoice = True
18  difference ← endYear - startYear
19  OUTPUT difference
```

[Turn over]

FIGURE 11

```
Dim animals As string() = {"cat", "dog", "hippo",
"llama", "ox", "rat", "tiger", "wolf"}
Console.Write("What animal would you like to find? ")
Dim animalToFind As string = Console.ReadLine()
Dim validAnimal As Boolean = False
Dim start As Integer = 0
Dim finish As Integer = animals.Length - 1
While validAnimal = False And start <= finish
   Dim mid As Integer = (start + finish) \ 2
   If animals(mid) = animalToFind Then
      validAnimal = True
   ElseIf animalToFind > animals(mid) Then
      start = mid + 1
   Else
      finish = mid - 1
```

```
    End If
End While
Console.WriteLine(validAnimal)
```

FIGURE 13

```
1    SUBROUTINE diffCurrencies(currencies)
        currencies ← ['baht', 'dollar', 'euro',
2                     'koruna', 'lira', 'rand',
                      'rupee', 'yen']
3       RETURN currencies[x]
4    ENDSUBROUTINE
5
6    FOR i ← 8 TO 0 STEP 1
7       OUTPUT(diffCurrencies(i))
8    ENDFOR
```

FIGURE 14

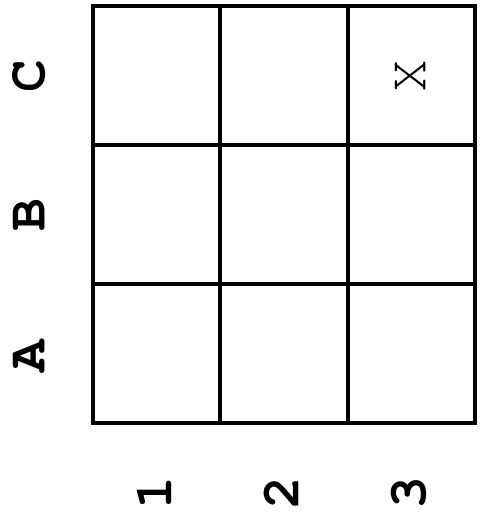

FIGURE 15

```
Dim check As Boolean = False
While check = False
    Dim square As String = ""
    While square.Length <> 2
        Console.Write("Enter grid reference (eg C2): ")
        square = Console.ReadLine()
        square = square.ToUpper()
    End While
```


[Turn over]

FIGURE 16

```
SUBROUTINE showResults(method, numberOfGenres)
    results ← [['Pop', 'Post-Punk', 'Techno', 'Metal',
                'Dance'], ['7', '19', '14', '1', '9']]
    pos ← 0
    high ← -1
    IF method = 'HIGHEST' THEN
        FOR i ← 0 TO numberOfGenres - 1
            Votes ← STRING_TO_INT(results[ L1 ][i])
            IF votes > high THEN
                high ← votes
                pos ← L2
            ENDIF
        ENDFOR
    ELSE
        OUTPUT 'not yet working'
```

```
    ENDIF
    IF high ≠ -1 THEN
        OUTPUT results[0][pos], ' with ', results[1][pos]
    ENDIF
ENDSUBROUTINE

OUTPUT 'Show the genre with the HIGHEST or LOWEST number
of votes?'
method ← USERINPUT
showResults( L3 , 5)
```

[Turn over]

FIGURE 17

```
Roll 1: 1
Roll 2: 4
Current score: 5
Would you like to roll again? yes

Roll 1: 1
Roll 2: 6
Current score: 12
Would you like to roll again? yes

Roll 1: 1
Roll 2: 2
Current score: 15
Would you like to roll again? yes

Roll 1: 6
Roll 2: 1
Current score: 22
You lost!
```

END OF DIAGRAM BOOKLET

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