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
```

[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()
```

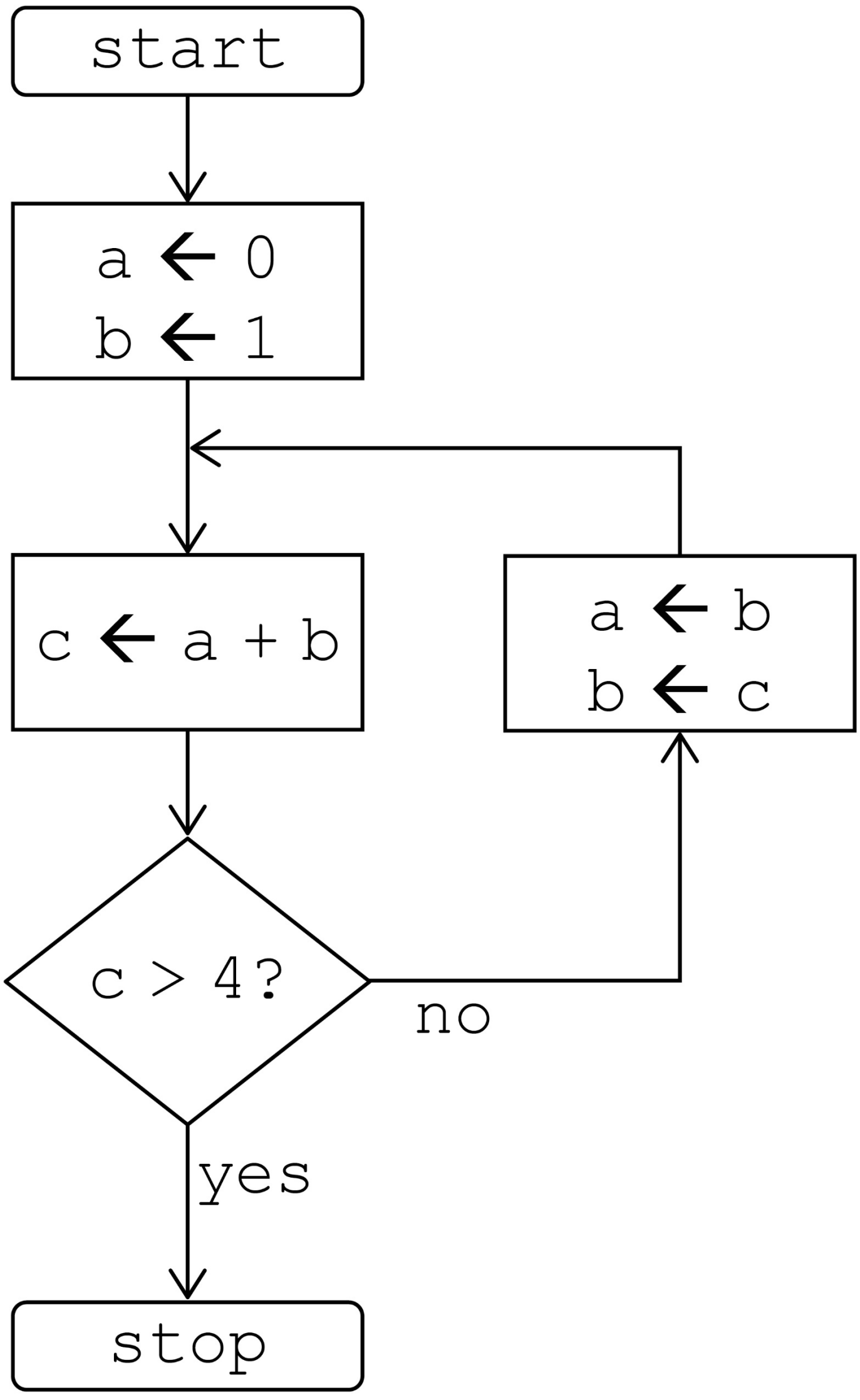
```
Console.Write("Enter height, -1 to ignore:")
numThree = Console.ReadLine()

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



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[Turn over]

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
```

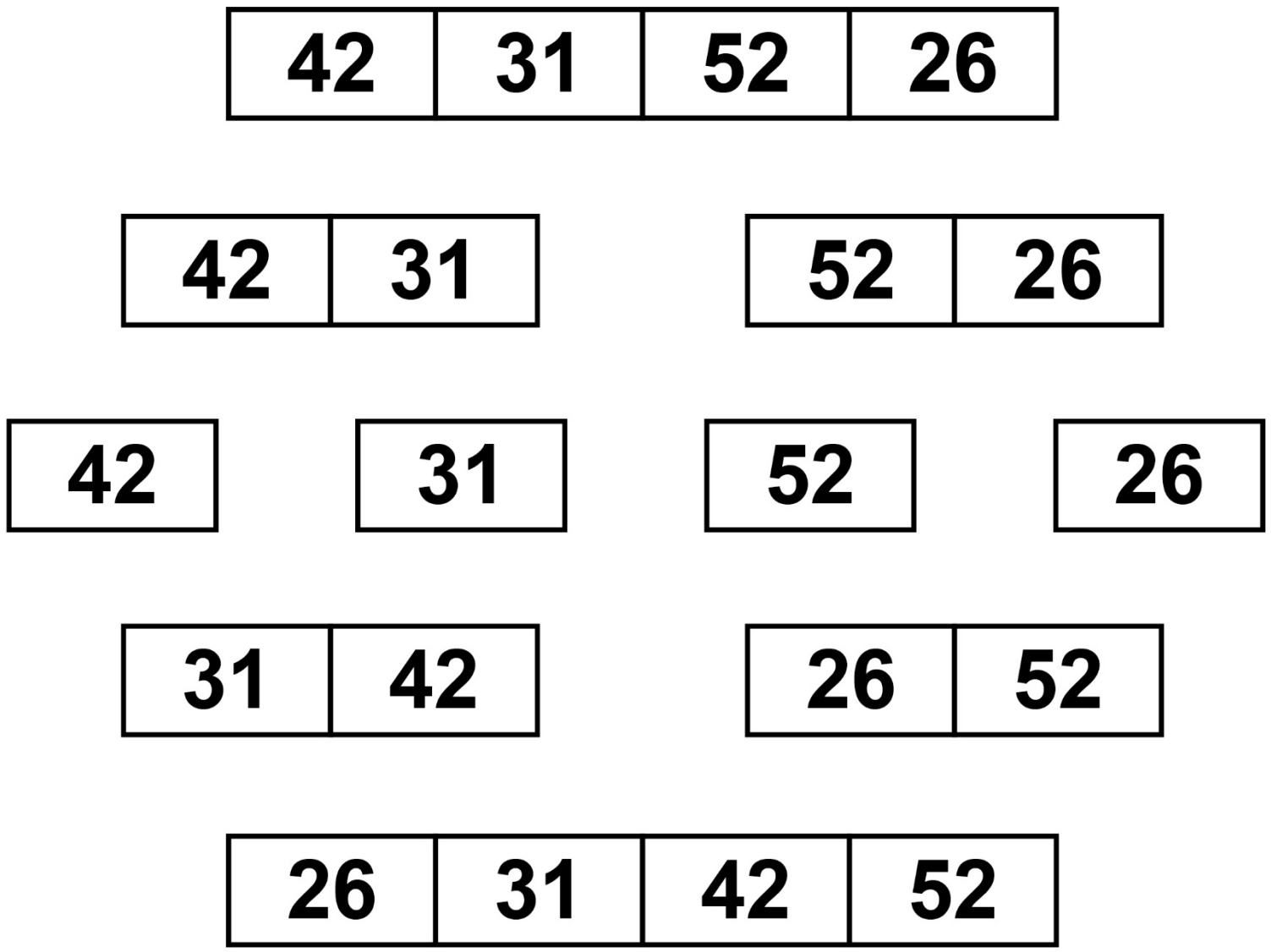
```
    OUTPUT ' (L4) '
ELSE
    IF password = storedPassword THEN
        login ← True
    ELSE
        OUTPUT 'Try again.'
    ENDIF
ENDIF
UNTIL login = True
OUTPUT 'You are now logged in.'
```

[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
```

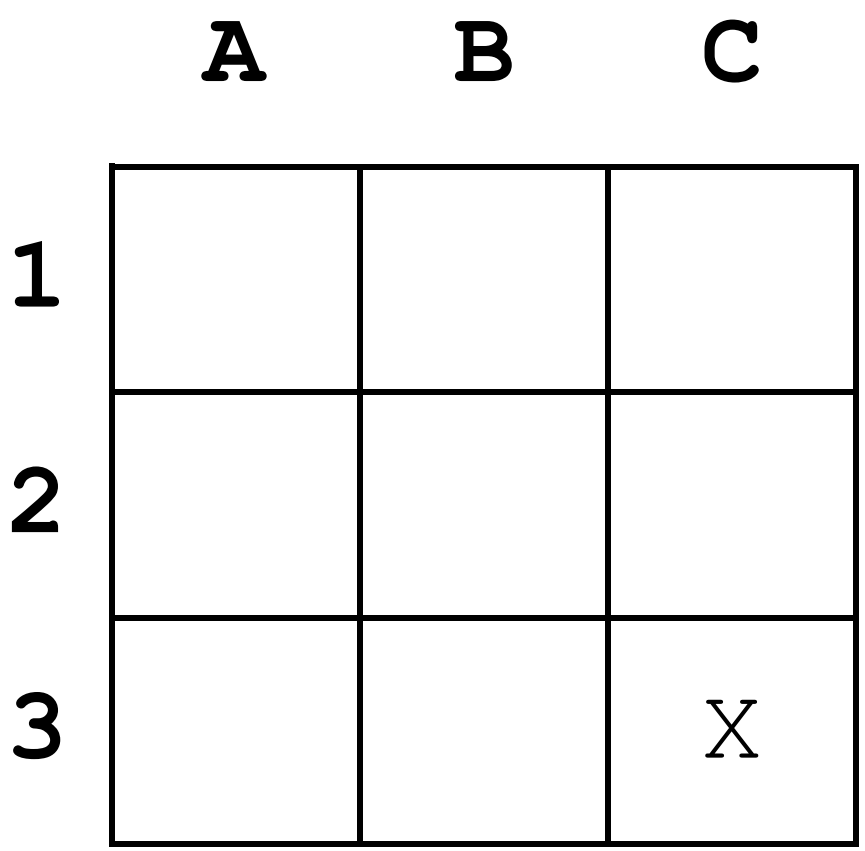
```
        finish = mid - 1
    End If
End While
Console.WriteLine(validAnimal)
```

[Turn over]

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



[Turn over]

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
```

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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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WP/M/CD/Jun23/8525/1C/E2

2 3 6 G 8 5 2 5 / 1 C