A

GCSE

COMPUTER SCIENCE

Paper 1 Computational thinking and programming skills – C#

8525/1A

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

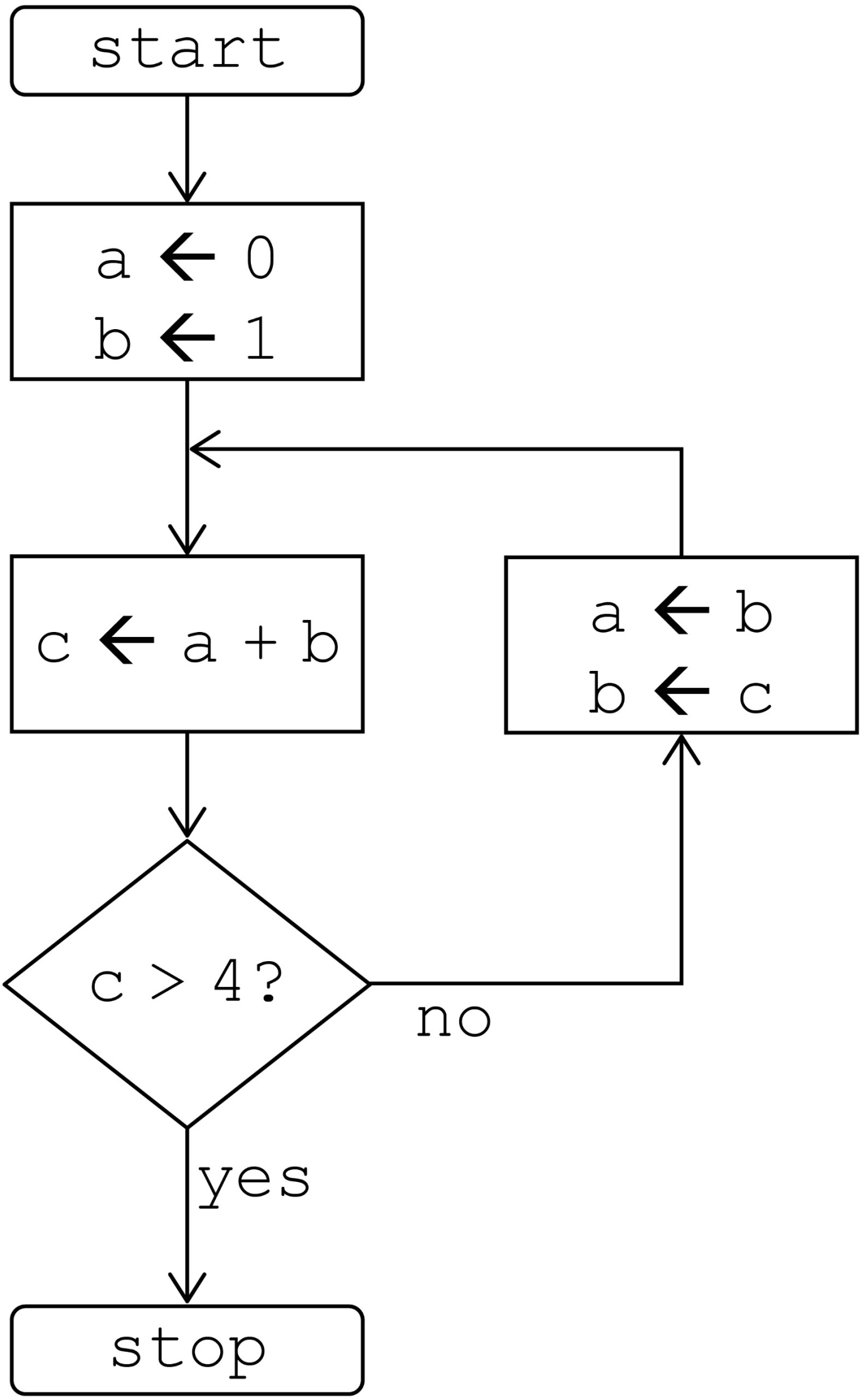
```
public static int calculate(int width, int length,
int height) {
    if (height == -1)
    {
        return width * length;
    } else
    {
        return width * length * height;
    }
}

public static void Main() {
    int numOne, numTwo, numThree, answer;
    Console.Write("Enter width: ");
    numOne = Convert.ToInt32(Console.ReadLine());
```

```
Console.Write("Enter length: ");
numTwo = Convert.ToInt32(Console.ReadLine());
Console.Write("Enter height, -1 to ignore: ");
numThree = Convert.ToInt32(Console.ReadLine());

answer = calculate(numOne, numTwo, numThree);

if (numThree == -1)
    {
       Console.WriteLine($"Area {answer}");
    } else
    {
       Console.WriteLine($"Volume {answer}");
    }
}
```


[Turn over]

BLANK PAGE

FIGURE 4



[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 )
```

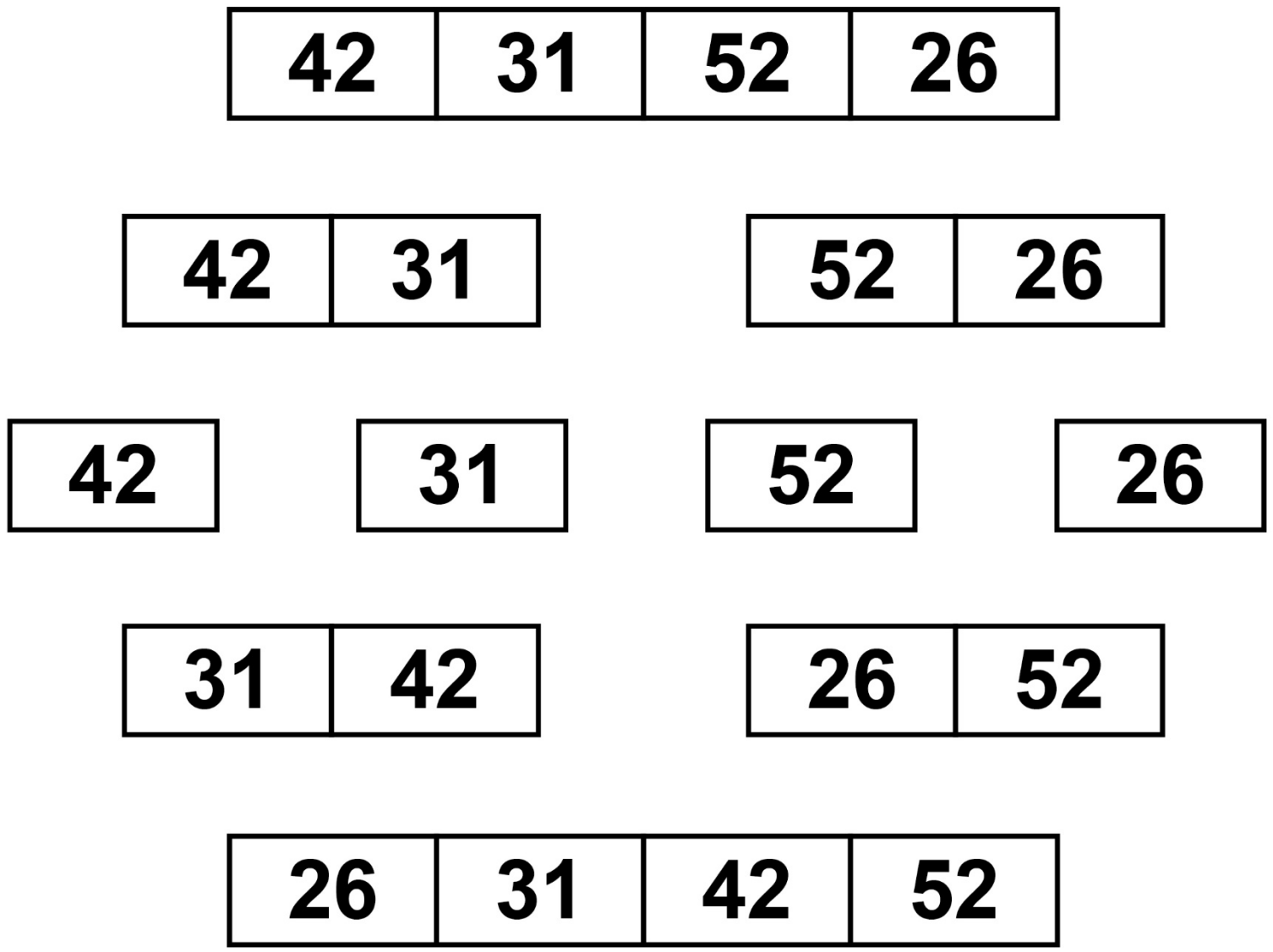
```
IF storedPassword =  L3 THEN
   OUTPUT ' L4 '
ELSE
   IF password = storedPassword THEN
      login ← True
   ELSE
      OUTPUT 'Try again.'
      ENDIF
   ENDIF
UNTIL login = True
OUTPUT 'You are now logged in.'
```

[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
```

BLANK PAGE

[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

```
string[] animals = {"cat", "dog", "hippo", "llama",
"ox", "rat", "tiger", "wolf"};
Console.Write("What animal would you like to find? ");
string animalToFind = Console.ReadLine();
bool validAnimal = false;
int start = 0;
int finish = animals.Length - 1;
while (validAnimal == false && start <= finish) {
   int mid = (start + finish) / 2;
   if (animals[mid] == animalToFind) {
      validAnimal = true; }
   else if (animalToFind.CompareTo(animals[mid]) == 1)
   {
      start = mid + 1;
   } else {
```

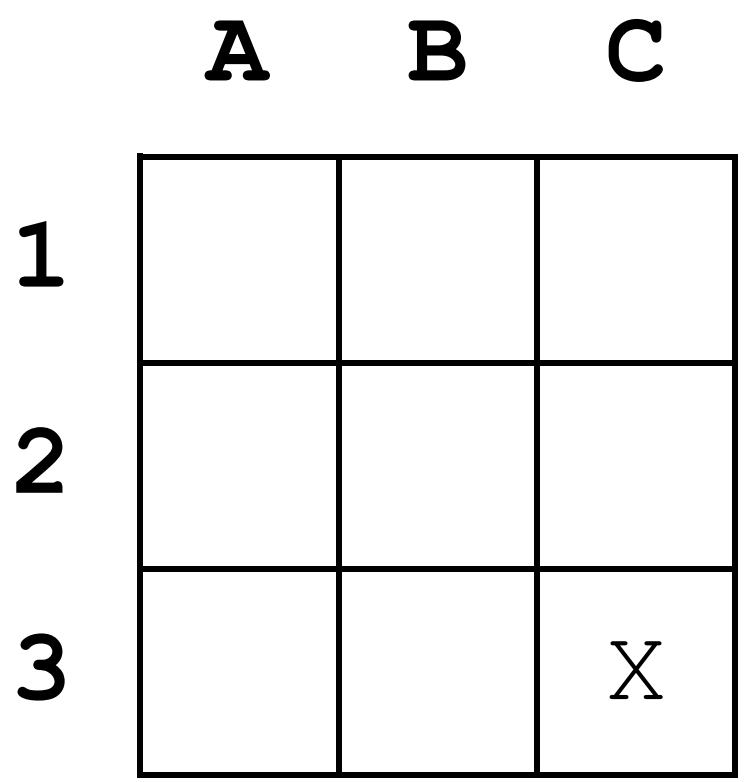
```
            finish = mid - 1;
        }
    }
    Console.WriteLine(validAnimal);
```

[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

```
bool check = false;
while (check == false) {
    string square = "";
    while (square.Length != 2) {
        Console.Write("Enter grid reference (eg C2): ");
        square = Console.ReadLine();
        square = square.ToUpper();
    }
```

BLANK PAGE

[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]

BLANK PAGE

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

BLANK PAGE

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

2 3 6 G 8 5 2 5 / 1 A