



GCSE

COMPUTER SCIENCE

**Paper 1 Computational thinking and programming
skills – C#**

8525/1A

Diagram Booklet

[Turn over]

FIGURE 1

```
film ← "Godzilla vs. Kong"  
year ← 2021  
OUTPUT "Please guess a letter"  
letter ← USERINPUT
```

FIGURE 2

```
1   num ← USERINPUT  
2   IF NOT(num > 1) OR num > 20 THEN  
3       OUTPUT "False"  
4   ELSEIF num > 1 AND num < 15 THEN  
5       OUTPUT "Almost"  
6   ELSEIF num MOD 5 = 0 THEN  
7       OUTPUT "True"  
8   ELSE  
9       OUTPUT "Unknown"  
10  ENDIF
```

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[Turn over]

FIGURE 3

```
1 Random rGen = new Random();
2 int randomNumber;
3
4 Console.WriteLine("Enter a number");
5 int userNumber = Convert.ToInt32(Console.ReadLine());
6 while (userNumber < 1 || userNumber > 100)
7 {
8     Console.WriteLine("Invalid number");
9     userNumber = Convert.ToInt32(Console.ReadLine());
10 }
11 Console.WriteLine("Valid number entered");
12 if (randomNumber == userNumber)
```

```
13 {  
14     Console.WriteLine("Number guessed correctly");  
15 }
```

[Turn over]

FIGURE 4

```
numberOfGuests ← USERINPUT
numberOfRooms ← USERINPUT
charge ← 25
IF numberOfGuests > 50 THEN
    totalCost ← numberOfGuests * 2
ELSE
    IF numberOfGuests ≥ 25 THEN
        totalCost ← numberOfGuests * 4
    ELSE
        totalCost ← numberOfGuests * 5
    ENDIF
ENDIF
totalCost ← totalCost + (numberOfRooms * 100)
IF totalCost < 1400 THEN
    totalCost ← totalCost + charge
ENDIF
OUTPUT totalCost
```

FIGURE 5

sweetID	sweetName	brand
S1	WINE GUMS	MAYNARDS
S2	COLA CUBES	BERRYMANS
S3	STARBURST	WRIGLEY

[Turn over]

FIGURE 6

```
days ← [10, 15, 4]
sales ← [20, 33, 12]
weeks ← [0, 0, 0]
FOR i ← 0 TO 2
    daysTotal ← days[i] + sales[i]
    weeks[i] ← daysTotal DIV 7
ENDFOR
weeksTotal ← weeks[0] + weeks[1] + weeks[2]
OUTPUT weeksTotal
```

TABLE 2

1	2	author
B1	B2	Book
bookName	i	Real
OUTPUT	String	Boolean

[Turn over]

FIGURE 8

```
static void First(int p1, int p2, int p3)
{
    int v1 = p2 + p3;
    Console.WriteLine(Second(v1, p1));
}
```

```
static int Second(int p1, int p2)
{
    int v1 = p1 + p2;
    if (v1 > 12)
    {
        v1 = v1 + Third(p1);
    }
    return v1;
}
```

```
static int Third(int p1)
{
    if (p1 > 3)
    {
        return 2;
    }
}
```

```
else
{
    return 0;
}
}
```

FIGURE 9

USERNAME	PASSWORD
Yusuf5	33kk
Mary80	af5r

[Turn over]

FIGURE 10

		column		
		0	1	2
row	0	4		2
	1	1	7	6
	2	5	3	8

FIGURE 11

		column		
		0	1	2
row	0	1	2	3
	1	4	5	6
	2	7	8	

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[Turn over]

TABLE 3

SUBROUTINE	PURPOSE
getTile (row, column)	<p>Returns the number of the tile on the board in the position (row, column)</p> <p>For example:</p> <ul style="list-style-type: none">• getTile(1, 0) will return the value 5 if it is used on the board in FIGURE 12, provided in the Diagram Booklet• getTile(1, 2) will return the value 0 if it is used on the board in FIGURE 12.
move (row, column)	<p>Moves the tile in position (row, column) to the blank space, if the blank space is next to that tile.</p> <p>If the position (row, column) is not next to the blank space, no move will be made.</p>

	<p>For example:</p> <ul style="list-style-type: none"> • <code>move(0, 2)</code> would change the board shown in FIGURE 12, provided in the Diagram Booklet, to the board shown in FIGURE 13, provided in the Diagram Booklet • <code>move(2, 0)</code> would not make a move if used on the board shown in FIGURE 12.
<code>displayBoard()</code>	<p>Displays the board showing the current position of each tile.</p>

[Turn over]

FIGURE 12

	0	1	2
row 0	1	7	4
row 1	5	8	
row 2	6	2	3

FIGURE 13

	column		
	0	1	2
row 0	1	7	
row 1	5	8	4
row 2	6	2	3

[Turn over]

FIGURE 14

```
if (getTile(1, 0) == 0)
{
    move(2, 0);
}
if (getTile(2, 0) == 0)
{
    move(2, 1);
}
displayBoard();
```

FIGURE 15

		column		
		0	1	2
row	0	1	8	3
	1		7	5
	2	4	2	6

[Turn over]

FIGURE 16

```
int ref1, ref2;
for (int i = 0; i < 3; i++)
{
    for (int j = 0; j < 3; j++)
    {
        if (getTile(i, j) == 0)
        {
            ref1 = i;
            ref2 = j;
        }
    }
}
```

FIGURE 17

		column		
		0	1	2
row	0	4	7	6
	1	3	8	1
	2		5	2

[Turn over]

TABLE 4

SUBROUTINE	PURPOSE
<code>getTile(row, column)</code>	Returns the number of the tile on the board in the position (<code>row</code> , <code>column</code>)

FIGURE 18

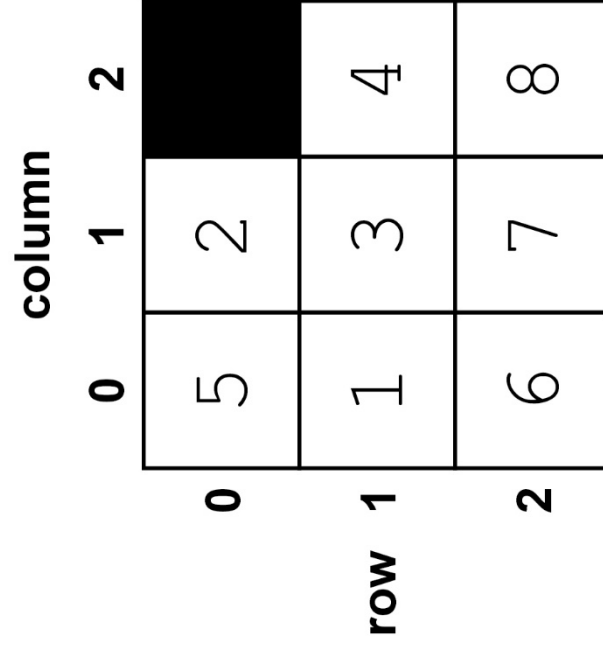


FIGURE 19

	0	1	2
row 0	2	3	4
row 1	5	1	
row 2	7	8	6

[Turn over]

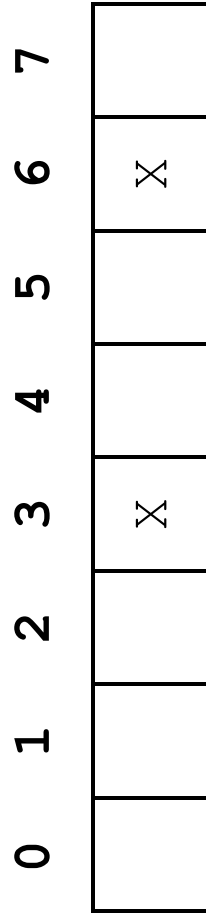
TABLE 5

SUBROUTINE	PURPOSE
solved()	Returns true if the puzzle has been solved. Otherwise returns false
checkSpace(row, column)	Returns true if there is a blank space next to the tile on the board in the position (row, column) Otherwise returns false

TABLE 6

SUBROUTINE	PURPOSE
<code>move (row, column)</code>	<p>Moves the tile in position (row, column) to the blank space, if the blank space is next to that tile.</p> <p>If the position (row, column) is not next to the blank space, no move will be made.</p>

FIGURE 20



[Turn over]

FIGURE 21

- The player starts at position 0 in a row of cells.
- The aim of the game is for the player to reach the end of the row.
- At each turn the player must enter either 1 or 2
 - if the player enters 1, the player's position increases by 1
 - if the player enters 2, the player's position increases by 2
- If the player's position goes beyond the end of the row or contains an X:
 - the message `Bad move` is displayed
 - the player goes back to position 0
- These steps are repeated until the player reaches the end of the row.
- If the player reaches the end of the row the game is finished.

FIGURE 22

```
int pos = 0;  
int lastPos = row.Length - 1;  
while (pos < lastPos)  
{
```

END OF DIAGRAM BOOKLET

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