AQA

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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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

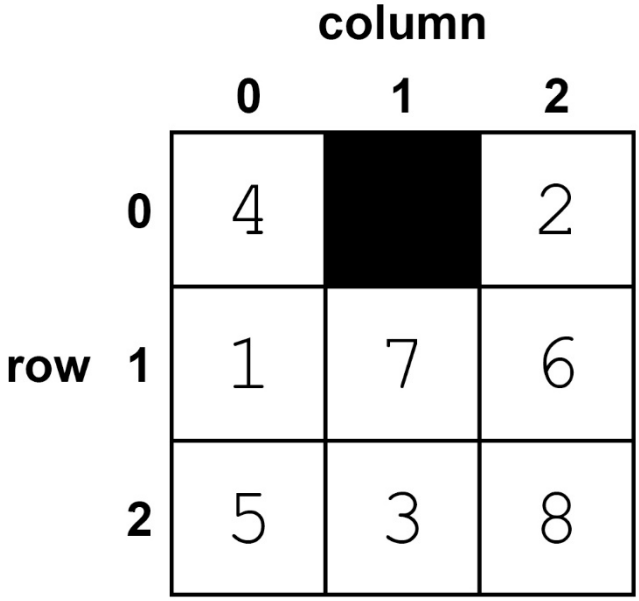

FIGURE 11

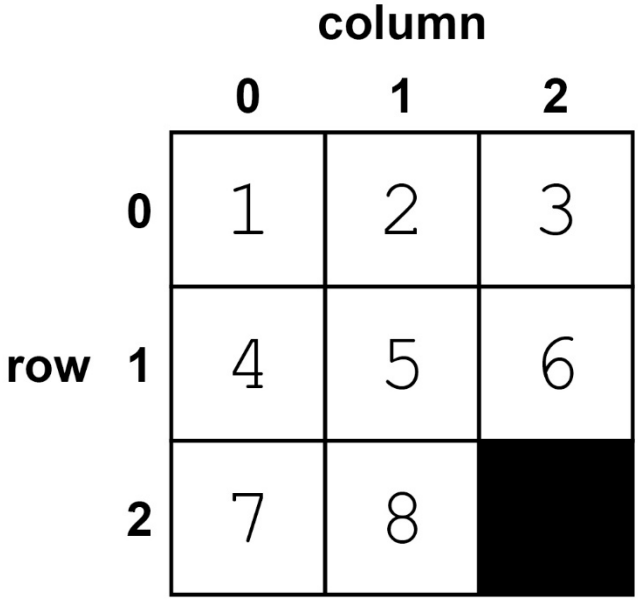

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TABLE 3

SUBROUTINE	PURPOSE
`getTile(row, column)`	**Returns the number of the tile on the board in the position** `(row, column)` **For example:** • `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)`	**Moves the tile in position** `(row, column)` **to the blank space, if the blank space is next to that tile.** **If the position** `(row, column)` **is not next to the blank space, no move will be made.**

	For example: • `move(0, 2)` **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** • `move(2, 0)` **would not make a move if used on the board shown in FIGURE 12.**
`displayBoard()`	**Displays the board showing the current position of each tile.**

[Turn over]

FIGURE 12

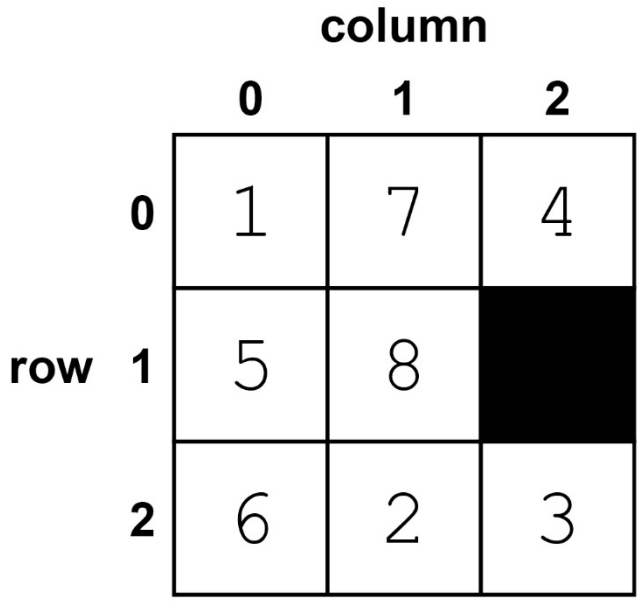
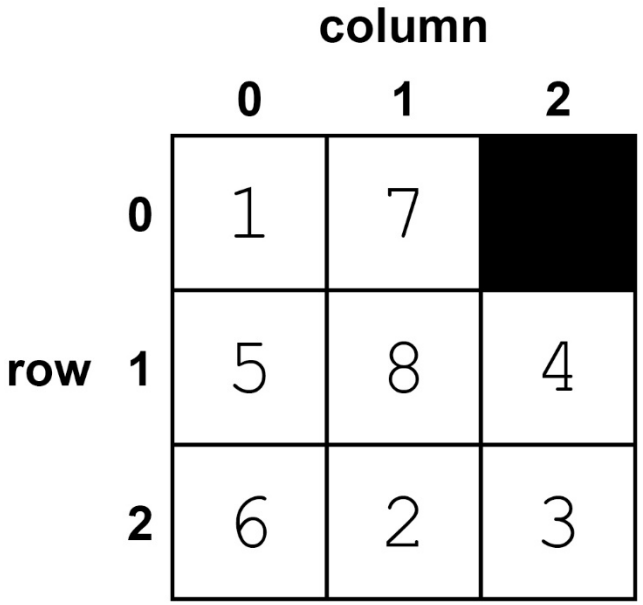


FIGURE 13

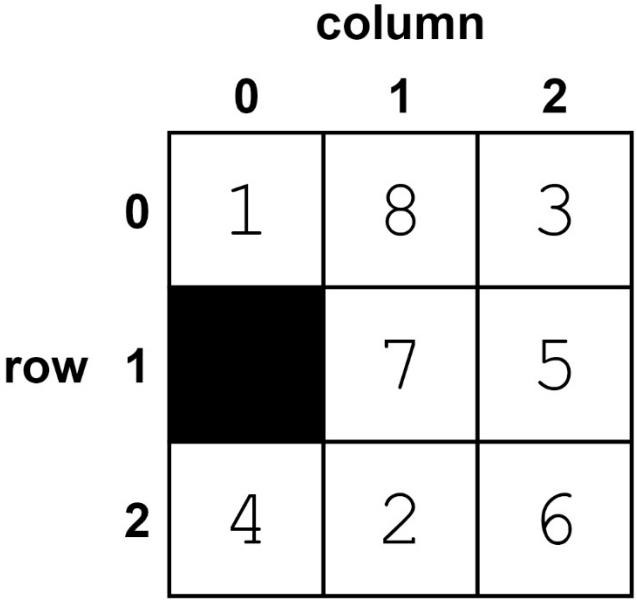


[Turn over]

FIGURE 14

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

FIGURE 15



[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

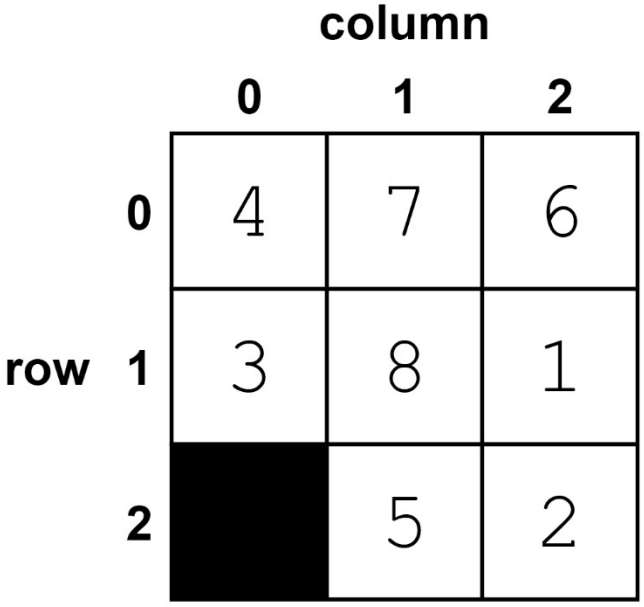


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TABLE 4

SUBROUTINE	PURPOSE
`getTile(row, column)`	**Returns the number of the tile on the board in the position** `(row, column)`

FIGURE 18

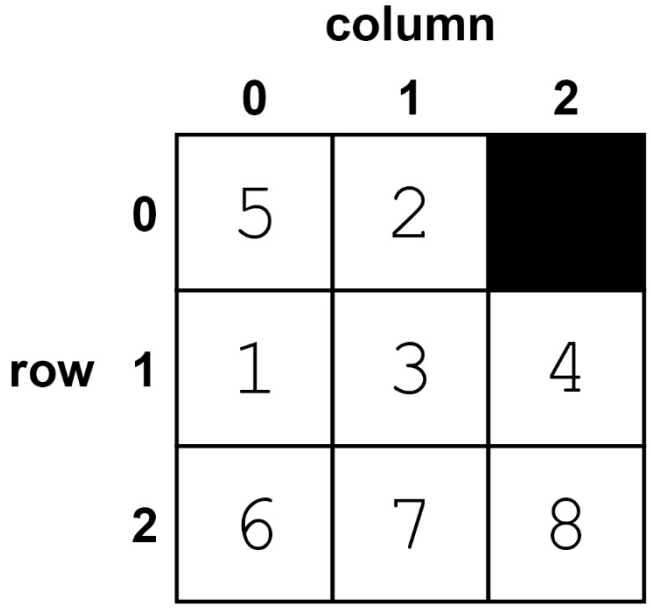
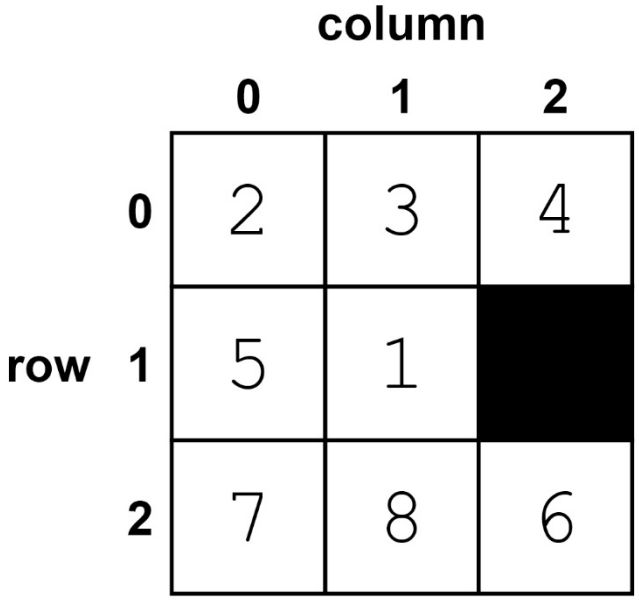


FIGURE 19



[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
`move(row, column)`	**Moves the tile in position** `(row, column)` **to the blank space, if the blank space is next to that tile.** **If the position** `(row, column)` **is not next to the blank space, no move will be made.**

FIGURE 20

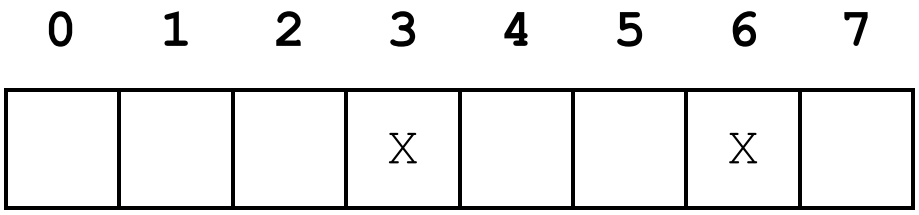


FIGURE 21

- **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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