

APOLLO

B2 Programming HL

Computer Science

First assessment 2027

2 questions | questions

Option A — Java

Answer **all** questions. All code that forms part of your responses must be written in Java.

2. A theatre stores the names and email addresses of its clients in two separate one-dimensional (1D) arrays, where each client's name and email address have corresponding indices. The two arrays are shown in **Table 2**.

Table 2: Name and email arrays

Name array		Email array	
Index	Name	Index	Email address
0	Maria Gonzalez	0	magonzalez24@example.net
1	Olga Sarkozky	1	osarkozky12@one2seven.org
2	Julia Brown	2	jbrown23@example.com
3	...	3	...

- (a) Explain why arrays have been chosen to hold this data instead of separate variables. [3]

A method has been constructed that will change each name so that the surname appears before the first name. For example, “Maria Gonzalez” will become “Gonzalez Maria”.

- (b) Describe the steps involved in this method.

Assume that there is only one space between each first name and surname. [4]

Consider the following two-dimensional (2D) array, `MAT`.

```
int[][] MAT = {{2, 7, 1}, {8, 9 ,0}}
```

- (c) State the code that will identify the data item 0 in `MAT`. [1]

(Option A continues on the following page)

— , —

(Option A, question 2 continued)

The following code operates on `MAT`:

```
int[][] MAT = {{2, 7, 1}, {8, 9, 0}};
int a = 0;
int b = 0;
for (int row = 0; row < 2; row++)
{
    for (int col = 0; col < 3; col++)
    {
        a = a + 1;
        int item = MAT[row][col];
        if (item%2 != 0)
            b = b + item;
    }
}
System.out.println ("The value of a is : " + a);
System.out.println ("The value of b is : " + b);
```

(d) State the output from this code.

[2]

The theatre employs a 2D array to indicate the status of each seat for a performance. `true` indicates that the seat has been sold for that performance. `false` indicates that it has not been sold.

The 2D array `seats` is used to represent the seating plan in the theatre. The array contains 40 rows and 30 columns.

For example, `seats[2][3] = false` shows that the seat in row 2, column 3 of the 2D array, `seats`, has not been sold.

After each performance, the sales data is analysed with a program that uses the method `least()`. This accepts the 2D array `seats` and outputs the row for which the lowest number of seats were sold.

(e) Construct the method `least()`.

Assume only one row matches this condition.

[5]

(Option A continues on the following page)

Turn over



(Option A continued)

Option B — Python

Answer **all** questions. All code that forms part of your responses must be written in Python.

8. A theatre stores the names and email addresses of its clients in two separate one-dimensional (1D) lists, where each client’s name and email address have corresponding indices. The two lists are shown in **Table 5**.

Table 5: Name and email lists

Name list		Email list	
Index	Name	Index	Email address
0	Maria Gonzalez	0	magonzalez24@example.net
1	Olga Sarkozky	1	osarkozky12@one2seven.org
2	Julia Brown	2	jbrown23@example.com
3	...	3	...

- (a) Explain why lists have been chosen to hold this data instead of separate variables. [3]

A function has been constructed that will change each name so that the surname appears before the first name. For example, “Maria Gonzalez” will become “Gonzalez Maria”.

- (b) Describe the steps involved in this function.

Assume that there is only one space between each first name and surname. [4]

Consider the following two-dimensional (2D) list, `MAT`.

```

MAT = [[2, 7, 1],
       [8, 9, 0]]

```

- (c) State the code that will identify the data item 0 in `MAT`. [1]

(Option B continues on the following page)

(Option B, question 8 continued)

The following code operates on `MAT`:

```
a = 0
b = 0
for row in range (0, 2):
    for col in range (0, 3):
        a = a + 1
        item = MAT[row][col]
        if item%2 != 0:
            b = b + item
print ('The value of a is : ',a)
print ('The value of b is : ',b)
```

(d) State the output from this code.

[2]

The theatre employs a 2D list to indicate the status of each seat for a performance. `True` indicates that the seat has been sold for that performance. `False` indicates that it has not been sold.

The 2D list `seats` is used to represent the seating plan in the theatre. The list contains 40 rows and 30 columns.

For example, `seats[2][3] = False` shows that the seat in row 2, column 3 of the 2D list, `seats`, has not been sold.

After each performance, the sales data is analysed.

One program uses the function `least()`. This accepts the 2D list `seats` and outputs the row for which the lowest number of seats were sold.

(e) Construct the function `least()`.

Assume only one row matches this condition.

[5]

(Option B continues on the following page)

Turn over

(Option B continued)