

Paypal Programming - Nov 2024

1. Write a program

A grasshopper is jumping on a long staircase, on which each stair is numbered; the bottommost stair being 1, the next stair being 2, and so on. In one jump, it can go some steps up or down. Given an array jumps of integers representing each jump of the grasshopper as:

- If $\text{jumps}[i] > 0$, the grasshopper jumps $\text{jumps}[i]$ steps up from its current step.
- If $\text{jumps}[i] < 0$, the grasshopper jumps $\text{jumps}[i]$ steps down from its current step.

Find the number of the lowest stair, starting Stair on which the grasshopper should start so that it can remain on the staircase; that is, the stair number remains ≥ 1 .

Example

$\text{jumps} = [1, -4, -2, 3]$.

If $\text{startingStair} = 6$, the following results are obtained:

Stair	jumps[i]
-------	----------

----	-----
------	-------

6	1
---	---

7	-4
---	----

3	-2
---	----

1	3
---	---

4	
---	--

For $\text{startingStair} = 6$, the stair number remains ≥ 1 throughout the jumps. This is the least possible value of startingStair for the condition to be true. Therefore, the answer is 6.

Function Description

Complete the function `findLowestStartingStair` in

2. Write a program

On a web form, users are asked to enter dates which come in as strings. Before storing them to the database, they need to be converted to a standard date format. Write a function to convert the dates as described.

Given a date string in the format Day Month Year, where:

- Day a string in the form "1st", "2nd", "3rd", "21st", "22nd", "23rd", "31st" and all others are the number + "th", e.g. "4th" or "12th".
- Month is the first three letters of the English language months, like "Jan" for January through "Dec" for December.
- Year is 4 digits ranging from 1900 to 2100.

Convert the date string "Day Month Year" to the date string "yy-MM-DD" in the format "4 digit year - 2 digit month - 2 digit day".

Example

- 1st Mar 1974 → 1974-03-01
- 22nd Jan 2013 → 2013-01-22
- 7th Apr 1904 → 1904-04-07

3. In a very large array where all elements appear twice except for one element, how can we find that unique element in an optimized way?

4. How can we remove duplicates from an array while maintaining the original order of elements?

5. Which search implementation is more efficient: linear search, binary search, or using a hashmap?

6. System Design - Design Apple APNS, Draw Diagrams and explain

7. Which of these correctly define bounds & frames in UIKit?

Pick One option

1. Bounds: Position relative to it's own coordinate system. Frame: Position relative to it's superview's coordinate system
2. Bounds: Position relative to it's superview's coordinate system. Frame: Position relative to it's own coordinate system.
3. Both are always same

8. Which of these are NOT copied when one of these operation is done in swift: assignment, initialization, and argument passing.

Pick One option

1. Struct
2. NSString
3. Array
4. Dictionary

9. When this code is executed, what will name2 be set to?

```
var names = [String]()  
names.append("David")  
let name1 = names.removeLast()  
let name2 = names.removeLast()
```

Pick One option

1. nil
2. ""
3. This code will compile but crash.
4. "David"
5. Compilation error

10. When a function takes a closure as a parameter, when do you want to mark it as escaping?

Pick One option

1. when it's lazy loaded
2. when it's scope is undefined
3. when it's executed after the function returns
4. all of these answers

11. Which of these have been deprecated in Swift?

Pick One option

1. @available
2. @propertyWrapper
3. NSString
4. Using 'class' to define protocol

12. What is wrong with the below code?

```
class Button {  
    func onTapActionButton(_ tapHandler: @escaping () -> ()) {  
        tapHandler()  
    }  
}
```

```
class View {  
    var counter = 0  
    Button().onTapActionButton {  
        self.counter += 1  
        print(self.counter)  
    }  
}
```

```
    Button().onTapActionButton  
}
```

13. What is wrong with the below code?

```
struct Rectangle {  
    var width: Double  
    var height: Double  
    var area: Double {  
        width * height  
    }  
    func doubleWidth() {  
        width *= 2  
    }  
}
```

14. What is wrong with the below code?

```
enum FuelType {  
    case Petrol  
}  
enum WheelType {  
    case axial  
}  
struct Fuel {  
    var type: FuelType  
}  
struct Wheel {  
    var type: WheelType  
}  
struct Car: Fuel, Wheel {  
    func addFuel() {  
        type = .Petrol  
    }  
    func addWheels() {  
        type = .axial  
    }  
}
```