litmustest

**TIME REMAINING** End Exam
**0:01:24**

**Note**: Please **SUBMIT** each question individually before ending the exam to receive score.
**Note: This is a monitored test.**

# Question Test

## A special BST

1 point possible (graded, results hidden)
What will be the max heap of the following heap:
**[29, 22, 29, 11, 41, 42, 33, 9, 27]**

- [ ] [42, 41, 33, 29, 29, 27, 22, 11, 9]
- [ ] [29, 29, 11, 22, 9, 42, 41, 33, 27]
- [ ] [42, 41, 33, 27, 22, 29, 29, 9, 11]
- [x] [42, 41, 33, 27, 9, 11, 29, 22, 29]

Submit

Answer submitted.

## Guess the output

1 point possible (graded, results hidden)
What will be the output of this pseudocode?

```
class A
    constructor():
        self.calc_i(527)

    calc_i(i):
        self.i = 65 * i;

class B inherits A
    constructor():
        super().constructor()
        print("i from B is", self.i)

    calc_i(i):
        self.i = 77 * i;

b = B()
```

You can select only one option.

- (●) 40579
- ( ) 37918
- ( ) 63154
- ( ) 66921

Submit

Answer submitted.

## Alphabet Rotation

1 point possible (graded, results hidden)

**N** is to ___ what **G** is to **K**?

You can select only one option.

- H
- L
- R
- V

Submit

Answer submitted.

## Sorting Puzzle

1 point possible (graded, results hidden)

We are sorting the list **[8, 3, 18, 1, 11, 18, 2]** using **insertion sort**, you need to calculate how many swaps will occur after the **3** and **onward** passes,

1 pass is 1 iteration through the array.

- 4
- 9
- 0
- 8

Submit

Answer submitted.

## CPU Task Assignment

1 point possible (graded, results hidden)

5 processes are assigned to a CPU in a cyclic way according to Round Robin technique. If p0 arrives at 0, p1 arrives at 4, p2 arrives at 4, p3 arrives at 2, p4 arrives at 4, Their burst time is 12, 12, 3, 3, 11 respectively. In which sequence the processes will complete if quantum time is 3

- (●) p3,p2,p0,p1,p4
- ( ) p3,p2,p4,p1,p0
- ( ) p3,p2,p0,p4,p1
- ( ) p3,p2,p1,p0,p4

Submit

Answer submitted.

## Company Revenue Calculation

1 point possible (graded, results hidden)

The yearly profits at a software house are as follows for two consecutive years:

The profits decreased by **6%** during year 1

increased by **8%** during year 2

What was the cumulative percent change for the two years?

- ( ) 1.04 % decrease
- ( ) 1.52 % decrease

1.04 % increase

1.52 % increase

Submit

Answer submitted.

## Payroll Playtime

1 point possible (graded, results hidden)

**Table: employee_age**

| emp_id | age |
|---|---|
| 102 | 27 |
| 103 | 37 |
| 101 | 24 |
| 100 | 22 |

**Table: employee_salary**

| emp_id | salary |
|---|---|
| 101 | 35000 |
| 106 | 50000 |
| 105 | 49000 |
| 104 | 75000 |

The output of the following SQL query will be:

```
SELECT
    MIN(eSal.salary)
FROM
    employee_age as eAge INNER JOIN employee_salary as eSal
ON
    eAge.emp_id = eSal.emp_id

    WHERE eAge.age > 22
GROUP BY eAge.emp_id
    HAVING MIN(eSal.salary) > 35000
```

- 49000
- 35000
- 50000
- None

Submit

Answer submitted.

## Mysterious Function

1 point possible (graded, results hidden)

```
        Mysterious_function(num1, num2)
        {
                if(num1 % 5 == 0)
                        return num1 + num2
                return Mysterious_function(num1+1, num2/2)
        }
```

What will this function call return? **Mysterious_function(87, 89)**

- 40
- 101
- 23
- 3

Submit

Answer submitted.

## Deciphering Mysterious Function

1 point possible (graded, results hidden)

Take a look at this function called 'foo' and the array
**[71, 31, 119, 47, 20, 121, 275, 240]**

```
FUNCTION foo(arr) {
        IF (length(arr) == 1)
                return arr[0]
        ENDIF

        last = arr.pop()
        x = foo(arr)

        IF (x > last)
                return x
        ELSE
                return last
        ENDIF
}
```

The function does some mysterious things with the array. It checks the numbers in the array one by one and makes them disappear in a strange way. Your task is to figure out what number is left after all the strange operations

- 121
- 198
- 285
- 275

Submit

Answer submitted.

## The Arbisoft Abstainers

1 point possible (graded, results hidden)

In a survey inside Arbisoft, it was found that **67%** of people drink coffee, **67%** drink cardamom tea, and **39%** drink both coffee and cardamom tea. If a total of **442** people were surveyed, how many of those drink neither coffee nor cardamom tea?

Choose the closest answer:

- 63
- 22
- 52
- 15

Submit

Answer submitted.

## Guess the number of calls

1 point possible (graded, results hidden)

```
function foo(int n)
  {
      if n==1
          return
      else if n > 10
          return foo(n - 4)
      else if n > 5
          return foo(n - 2)
      else
          return foo(n - 1)
      }
```

In above pseudocode evaluate the number of calls made to function foo(), if n=16

- 9
- 8
- 6
- 7

Submit

Answer submitted.

# Key Decryption Challenge

1 point possible (graded, results hidden)

A cipher algorithm uses a specific key to encode messages. You were tasked to hack their system and retrieve the key and algorithm. You hacked their system and were able to see their algorithm and past usage but the key was inaccessible. Since the algorithm is quite simple, try to calculate the key by looking at algorithm and its previous usage.

```
FUNCTION encode_message(message, key):
  encoded_message = ''
  inversed_message = inverse_the_string(message)

  FOR Loop index, char through inverse_message:
    encoded_message += char + key[index mod length_of_key]
  END FORLOOP
  RETURN encoded_message
END FUNCTION
```

## Usage History:

| Original Message | Encoded Message |
|---|---|
| hellothere | egrrerhwteoglrlrewhe |
| redalert | tgrrerlwaedgerrr |

Hint: mod = modulus(%) e.g 3 mod 4 = 3; 4 mod 4 = 0.

- ○ frrwe
- ◉ grrwe
- ○ grrwg
- ○ grdwe

Submit

Answer submitted.

## Machine Production

1 point possible (graded, results hidden)

There are 2 machines, one machine produces P1 products in H1 hours. However, another machine produces P2 products in H2 hours. How many minutes will it take the machines to produce **1940** products if p1=**1370**, h1=**4**, p2=**1940**, h2=**6**?

**Give closest answer**

- 101
- 185
- 122
- 191

Submit

Answer submitted.

## Generate Cipher

1 point possible (graded, results hidden)

```
int getSecretKey(int public_key)
{
    print<<public_key
    if num < 17
    {
        getSecretKey( getSecretKey( getSecretKey( ++public_key ) ) )
    }
    return public_key
}
```

The above pseduocode generates a secret key from a public key. What would be the output secret key of the function **getSecretKey(public_key)** where **public_key = 15**?

- (●) The secret key is 15161717171717
- ( ) The secret key is 1516171717171717
- ( ) The secret key is 16171717171717
- ( ) The secret key is 151617171717

Submit

Answer submitted.

## Caesars' Capital

1 point possible (graded, results hidden)

**Anabel**, **Bob** and **Caesars** enter into a partnership with an investment in which **Anabel's** contribution is **$7000**. if out of a total profit of **$1100**, Anabel and Bob get **$500** and **$100** respectively, then what is **Caesars'** capital?

- ( ) 6800.0
- (●) 7000.0

- 7350.0
- 7050.0

Submit

Answer submitted.

## Arbisoft Sports Club

1 point possible (graded, results hidden)

In a sports club named “Arbisoft Sports Club” X no of players play football. Y no of players play both football and cricket. Z no of players neither play football nor cricket. How many players only play cricket if the total number of players in the club is P?
P = **295**, X = **117**, Y = **96**, Z = **58**?

- (•) 24
- 120
- -14
- 82

Submit

Answer submitted.

## Cryptic Bitwise Puzzle

1 point possible (graded, results hidden)

Consider the enigmatic binary sequences provided:

**A =0110001100101001**

**B = 0110011000000000**

What is the result of the bitwise operation (A OR B)?

- 0111000011100111
- 0001110110011101
- 1011111001001110
- 0110011100101001

Submit

Answer submitted.

## The Mystery of the Missing Page

1 point possible (graded, results hidden)

Given a capacity of **5**, what is the total number of page faults when using first in first out strategy?

Pages: **[0, 5, 1, 7, 0, 7, 5, 6, 7, 1]**

- 6
- 3
- 5

2

Submit

Answer submitted.

## Comparisons Count

1 point possible (graded, results hidden)

How many numbers of (equal to) comparisons are required to find **435** in **[100, 335, 435, 523, 536, 696, 783, 793, 814, 839]** using Binary Search?

5

3

8

2

Submit

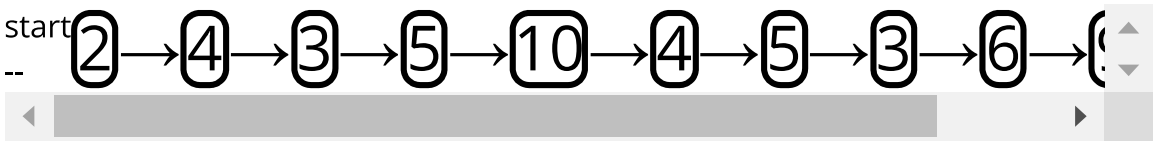
Answer submitted.

## Strange Traversal

1 point possible (graded, results hidden)

I hope you have an idea about the traversal of a Singly Linked List. In every node of the Linked List there is a value and next pointer.

Dryrun this code with the given Linked List and answer the following question. Note that, **start** is pointing at the **head** therefore, **start->value** is equal to **2** and **start->next->value** is equal to **4**.




```
x = start
while x != null do
    y = x->next
    while y != null AND ( y->value MOD x->value == 0 ) do
        y_old = y
        y = y->next
        y_old = null
    end while
    x->next = y
    x = x->next
end while
```

The length of input Linked List is 10, **what will be the updated length of the Linked List?**
If you are on mobile device, scroll the above linked list to see the nodes

- (•) 6
- ( ) 7
- ( ) 9
- ( ) 10

Submit

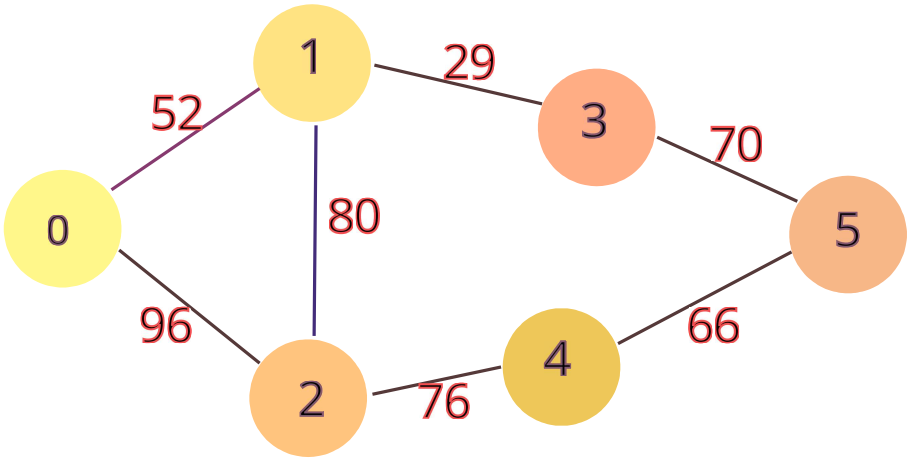
Answer submitted.

# Path Sum

1 point possible (graded, results hidden)

Consider the following undirected graph. If we were to create a representation for this graph as an adjacency matrix `M`, what would be the sum of **4th** column of `M`.

**NOTE:** Counting starts from 0 as (0th, 1st, 2nd, 3rd, 4th, 5th ...)




- 142
- 99
- 161
- 148

Submit

Answer submitted.

## Customer Analysis

1 point possible (graded, results hidden)

Find out the Customers (**CustomerName, PostalCode**) who have placed **less** than **57** orders.

| **Customers** | | **Orders** |
|---|---|---|
| CustomerID | | OrderID |
| CustomerName | | CustomerID |
| Address | | OrderID |
| City | | ShipperID |
| PostalCode | | OrderDate |

There is one correct option

- SELECT Customers.CustomerName, Customers.PostalCode, COUNT(Orders.OrderID) AS NumberOfOrders FROM Orders WHERE Orders.CustomerID = Customers.CustomerID GROUP BY CustomerName HAVING NumberOfOrders < 57 ORDER BY NumberOfOrders asc;
- SELECT Customers.CustomerName, Customers.PostalCode, COUNT(Orders.OrderID) AS NumberOfOrders FROM Orders INNER JOIN Customers ON Orders.CustomerID = Customers.CustomerID GROUP BY CustomerName HAVING COUNT(Orders.OrderID) < 57 ORDER BY NumberOfOrders asc;
- SELECT Customers.CustomerName, Customers.PostalCode, Orders.OrderID AS NumberOfOrders FROM Orders, Customers WHERE Orders.CustomerID = Customers.CustomerID GROUP BY CustomerName ORDER BY NumberOfOrders asc HAVING COUNT(Orders.OrderID) < 57;
- SELECT Customers.CustomerName, Customers.PostalCode, COUNT(Orders.OrderID) AS NumberOfOrders FROM Orders INNER JOIN Customers ON Orders.CustomerID = Customers.CustomerID GROUP BY CustomerName ORDER BY NumberOfOrders asc HAVING COUNT(Orders.OrderID) > 57;

SELECT Customers.CustomerName, Customers.PostalCode, COUNT(Orders.OrderID) AS NumberOfOrders FROM Orders INNER JOIN Customers ON Orders.CustomerID = Customers.CustomerID GROUP BY CustomerName WHERE COUNT(Orders.OrderID) < 57 ORDER BY NumberOfOrders asc;

Submit

Answer submitted.

## Number Hunt

1 point possible (graded, results hidden)

Suppose that we have numbers between **1** and **100** in a binary search tree and we want to search for the number **96**. Which of the following sequences could not be the sequence of nodes examined ?

[12, 65, 69, 96]

[79, 81, 97, 91, 94, 96]

[33, 70, 96]

[13, 70, 9, 25, 99, 96]

Submit

Answer submitted.

## Evaluate expression

1 point possible (graded, results hidden)

- - 8 2 + - 4 10 * 8 7

Evaluate the above stream of input in prefix notation.

- -24
- -34
- -54
- -44

Submit

Answer submitted.

## Shelving Books

1 point possible (graded, results hidden)

Ammy has three French novels **(A, E, G)** and Four German novels **(D, F, C, B)**. She wants to arrange her novels in a way that following conditions must be met:

- No german novel can be placed immediate after another german novel.

- G must be placed earlier than C.

- F and C must be separated from each other by at least one novel.

- F must be placed immediately before or after A.

- A must be placed immediately after D, but not if E is placed earlier than D.

Choose the best sequence of novels:

- D, G, B, E, F, A, C

- E, G, F, B, C, A, D
- B, E, D, G, F, A, C
- C, A, F, G, B, E, D

Submit

Answer submitted.

## Helping Alice

1 point possible (graded, results hidden)

Alice is stuck in a maze and is not able to figure out her next step. You can help Alice using a special program that works as follows:

- If you get more 1's than 0's, Alice should take a right.
- If you get more 0's than 1's, Alice should take a left.
- If you get equal number of 1's and 0's, Alice should go straight.

**function foo()**
    print 1

**function soo()**
    print 0

**function zoo()**
    foo()
    soo()

**function koo()**
    foo()
    soo()
    soo()

**function loo()**
    foo()

foo()
soo()

If the functions run in the following order, what should be the next step Alice takes?
**foo(), foo(), zoo(), loo(), foo(), soo(), soo(), koo()**

- Alice should take a left.
- Alice should go straight.
- Alice should take a right.
- I am unable to help Alice.

Submit

Answer submitted.

## SQL Challenge: What's the Output?

1 point possible (graded, results hidden)
Consider the following query:

```
SELECT AVG(value)
FROM (
    SELECT DeptName , MAX(Cgpa) as value
    FROM Students
    INNER JOIN Departments ON Departments.DeptID = Students.DeptID
    GROUP BY DeptName
)
```

What's the output of the query when it's executed on the following data? Write answer in upto 2 decimal places

| Name | Cgpa | DeptID |
|---|---|---|
| Oliver | 3.29 | 1 |
| Arthur | 3.67 | 2 |
| George | 3.72 | 0 |
| Liam | 3.42 | 1 |
| Elijah | 3.08 | 1 |
| Emma | 3.26 | 0 |
| Sophia | 3.20 | 1 |
| Thomas | 3.28 | 2 |
| Robert | 3.80 | 1 |
| Edward | 3.19 | 2 |

| DeptID | DeptName |
|---|---|
| 0 | BIO |
| 1 | PSY |
| 2 | AST |

- 1.86
- 3.73
- 1.24
- 3.97

Submit

Answer submitted.

## Set Theory Challenge

1 point possible (graded, results hidden)

If

A = **{{2, 4}, 4, 5, 6, 8, {9}}**

B = **{{2}, 1, 2, 4, 6}**

C = **{1, 2, 4, 6, 8, 9, {9}}**

D = **{{2}, 1, 10, 4, 7}**

Then the set **(B U A) - (B ∩ C)** is:

- {{2, 4}, {2}, 5, {9}}
- {1, 4, 5, 7, 8, 9, 10, {2}}
- {}
- {{2, 4}, 8, {2}, 5, {9}}

Submit

Answer submitted.

## Pseudo Code Evaluation

1 point possible (graded, results hidden)

Here is a pseudo code:

```
function foo(limit):
    result = 0
    for k = 0 to limit do:
        if ( ( k % 3 ) == 1 )
            result = result + k
        otherwise
            result = result + 8
    return result
```

What will be the return value of foo(**6**)?

- (●) 45
- ( ) 48
- ( ) 41
- ( ) 52

Submit

Answer submitted.

## Old MacDonald had a ranch

1 point possible (graded, results hidden)

If X individual bells ring at intervals of **2, 5, 6, 8** seconds each respectively. They ring completely independently of each other. At some point, all the bells will ring simultaneously. Find out how many times the bells will ring simultaneously for Y minutes.

If values are:

X = **4**

Y = **720**

- (●) 360.0
- ( ) 6.0
- ( ) 240
- ( ) They will never ring together
- ( ) 362

720

Submit

Answer submitted.