

MHA Developer Test

Section 1 : C#

Which of the following is the correct about interfaces in C#?

1. Interfaces are declared using the interface keyword.
2. Interface methods are public by default.
3. Both of the above.
4. None of the above.

Both of the above

Which of the following is correct about Object Type in C#?

1. The Object Type is the ultimate base class for all data types in C# Common Type System (CTS).
2. Object is an alias for System.Object class.
3. The object types can be assigned values of any other types, value types, reference types, predefined or user-defined types.
4. All of the above.

All of the above

Which of the following is the default access specifier of a class member variable?

1. Private
2. Public
3. Protected
4. Internal

Private

Which of the following is the correct about static member variables of a class?

1. We can define class members variables as static using the static keyword.
2. When we declare a member of a class as static, it means no matter how many objects of the class are created, there is only one copy of the static member.
3. Both of the above.
4. None of the above.

Both of the above

The System.SystemException class is the base class for all predefined system exception in C#?

1. true
2. false

False

Which of the following keyword is used for including the namespaces in the program in C#?

1. imports
2. using
3. exports
4. None of the above.

Using

Section 2 : LINQ

A class must implement _____ interface in order to provide querying facility using LINQ.

1. IEnumerator or IQueryable
2. IEnumerable or IQueryable
3. Enumerable or Queryable
4. None of the above

IEnumerable or IQueryable

Which of the following types of syntax LINQ supports?

1. Query syntax
2. Method syntax
3. All of the above
4. None of the above

All of the above

```
var teenAgerStudent = from s in studentList
    where s.Age > 12 && s.Age < 20
    select s;
```

The above query is an example of _____ syntax.

1. Method syntax
2. Query syntax
3. C#
4. VB

Query syntax

```
var teenAgerStudents = studentList.Where(s => s.Age > 12 && s.Age < 20)
    .ToList<Student>();
```

The above query is an example of _____ syntax.

1. Query syntax
2. Method syntax
3. SQL
4. All of the above

Method syntax

Which of the following standard query operator returns the differences between the two collections?

1. Distinct
2. Except
3. Intersect
4. Union

Except

Which of the following standard query operator returns the unique elements from two collections?

1. Distinct
2. Except
3. Intersect
4. Union

Union

What is the difference between First and FirstOrDefault?

1. First throws an exception whereas FirstOrDefault returns default value, if no elements found for specified criteria.
2. First returns NULL whereas FirstOrDefault returns default value, if no elements found for specified criteria.
3. First throws an exception whereas FirstOrDefault returns NULL, if no elements found for specified criteria.
4. First returns void whereas FirstOrDefault returns NULL value, if no elements found for specified criteria.

Consider the below code snippets:

1.

```
string text = "Racecar";  
var result = Enumerable  
    .SequenceEqual(text.ToCharArray(), text.ToCharArray()  
    .Reverse());
```

2.

```
string text = "racecar";  
var result = Enumerable  
    .SequenceEqual(text.ToCharArray(), text.ToCharArray()  
    .Reverse());
```

What is the purpose of these snippets?

Will both snippets return "true"? Why / Why not?

Section 3 : SQL

Which of the following is not true about SQL joins?

1. An inner join is a join of two tables returning only matching rows.
2. A left or right outer join returns the results of the inner join as well as the unmatched rows in the left or right table respectively.
3. A full outer join returns results of an inner join as well as the results of a left and right join.
4. None of the above.

Which of the following is not true about the COUNT function?

1. COUNT(*) returns the number of rows in the table.
2. COUNT(exp) returns the number of rows with non-null values for the exp.
3. COUNT(DISTINCT exp) returns the number of unique, non-null values in the column.
4. All are true.

Which of the following is true about removing rows from a table?

1. You remove existing rows from a table using the DELETE statement
2. No rows are deleted if you omit the WHERE clause.
3. You cannot delete rows based on values from another table.
4. All of the above.

Which of the following is not true about the ON clause?

1. ON clause is used to specify conditions or specify columns to join.
2. ON clause makes the query easy to understand.
3. ON clause does not allow three way joins.
4. None of the above.

Which code snippet will alter the table LOCATIONS and delete the column named CITY?

1. MODIFY TABLE locations DROP (city varchar2(30));
2. ALTER TABLE locations DROP COLUMN city;
3. ALTER TABLE locations DROP (city);
4. None of the above.

Select "Dependants" where the name starts with a "C"

```
SELECT Dependants FROM TableName  
WHERE Name LIKE 'C%';
```

Select "Dependants" where the "Name" is Peter and the "Surname" is not "Jackson"

```
SELECT Dependants FROM TableName  
WHERE Name = 'Peter' AND Surname <> 'Jackson';
```

Select “Beneficiaries” where the “Surname” is alphabetically between (and including) “Lodewyks” and “Smit”

```
SELECT Beneficiaries FROM TableName
WHERE Surname BETWEEN 'Lodewyks' AND 'Smit'
ORDER BY Surname, Name;
```

Select “Beneficiaries” sorted descending by “Surname” then “Name”

```
SELECT Beneficiaries FROM TableName
ORDER BY Surname DESC, Name DESC;
```

Change all “Policies” where the “PlanId” is 934 to “PlanId” 16

```
UPDATE TableName SET PlanId = 16
WHERE PlanId = 934;
```

Get the sum (“Amount”) of all “Transactions” made in December 2018

```
SELECT SUM(Amount) FROM Transactions
WHERE TransactionDate >= '2018-12-01' AND TransactionDate < '2019-01-01';
```

Create a new table with the name “Asset” containing an auto incremented unique identifier (“AssetId”), a description of the asset (“AssetDescription”), and the owner (“Owner”).

```
CREATE TABLE Asset (
AssetId INT IDENTITY(1,1) PRIMARY KEY,
AssetDescription VARCHAR(255),
Owner VARCHAR(100)
);
```

Section 4 : Web

Explain the difference between the below HTTP verbs in the instance of REST API.

- GET

Used to get data from a specific resource.

- POST

Sends data to the server to create a new resource.

- DELETE

Deletes a specific resource.

- PUT

Updated a specific resource, will create a new resource if it doesn’t exist.

Match the correct status code to return based on the API call outcome:

Message	Correct	Possibilities
Successfully created object passed in	201	500
Internal server error	500	403
Bad Request	400	401

Unauthorized	401	201
Forbidden	403	200
Redirect	302	400
Successful Request	200	302

Write a jQuery script to get a list of all the objects with a class of “testClass” .
Var testClassObjects = \$(".testClass");

In JavaScript, there are three uses of the equal operator. State the difference between the three uses below:

1. `'='`
2. `'=='`
3. `'==='`

`'='` is used when assigning a value to a variable.

`'=='` this is a non-strict equality operator, it'll first convert the variables to the same type before comparing.

`'==='` this is a strict equality operator, it doesn't convert the variables to the same type before hand.

Which symbol is used for comments in Javascript?

`'/'` Is used to make comments.

What would be the result of `3+2+"7"`?

`"57"`

What are escape characters?

These are characters (or sequence of characters) that have a special meaning, such as `\n` to make a newline.

Section 5

A windowless room contains three identical light fixtures, each containing an identical light bulb or light globe. Each light is connected to one of three switches outside of the room. Each bulb is switched off at present. You are outside the room, and the door is closed. Before opening the door you may play around with the light switches as many times as you like. But once you've opened the door, you may no longer touch a switch. After this, you go into the room and examine the lights. How can you tell which switch goes to which light?

I would flip the first light switch and then wait 5 minutes. After waiting I would switch it off and then switch the third light on and enter the room. If the Light is on, it is the third light switch, if it is off but warm to the touch it's the first switch and if it is off and cold I know it is the second switch.

Section 6: Advent of Code (Extra credit)

At MHA the IT team enjoys taking part in the advent of code every year, it is an annual set of Christmas-themed programming challenges that follow the advent calendar.

Show us your skills by completing as many days as you like, validating the code works by providing your answer to advent of code, then send us a link to your repo including a screenshot of your advent of code completion along with this test.

<https://adventofcode.com/>