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Sample Paper
FINAL TERM EXAMINATION
Fall 2022
CS508 - Modern Programming Languages

Time: 90 min
Marks: 60

Question No: 1 (Marks: 01) - Please choose the correct option
The concept of list processing was developed by _____ and _____ at the
RAND Corporation around 1956.

Harvey Deitel, Paul Deitel
Dennis Ritchie, Jean McGee Ritchie
Allen Newell, J. C. Shaw, Herbert Simon
Alan Turing, Charles Babbage

Question No: 2 (Marks: 01) - Please choose the correct option
In LISP, there is a limit to the depth of recursion, and it depends on the _____.

Version of LISP

Execution speed of processor
Operating systems version
Programmer's capabilities

Question No: 3 (Marks: 01) - Please choose the correct option
In LISP, load is an example of _____.

List

Function

Input/Output
Predicate

Question No: 4 (Marks: 01) - Please choose the correct option
Programming, in logic programming languages is _____.

Non-procedural

Procedural
Sequential Serial

Question No: 5 (Marks: 01) - Please choose the correct option
In Prolog, we don't specify _____.

Algorithm

Facts
Logical relationships Rules

Question No: 6 (Marks: 01) - Please choose the correct option
CLR (Common Language Runtime) is similar to _____.

Java Development Kit
Java Virtual Machine

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Software Development Kit
Dynamic Link Library

Question No: 7 (Marks: 01) - Please choose the correct option
In order to print the output and go to the next line in C# language, which syntax is correct?

Console.WriteLine("Hello World!");

Console.Write("Hello World!");

Console.Write("Hello Mono World")+ ("New Line");

Console.Write ("Hello Mono World")+ NewLine;

Question No: 8 (Marks: 01) - Please choose the correct option
Structure in C# cannot be inherited by any class, except _____ class.

System

Class

Object

Interface

Question No: 9 (Marks: 01) - Please choose the correct option
What should be the return type of given C# code?

```
public _____ setSize (int value) {  
    size = value;  
}
```

void

int

float

double

Question No: 10 (Marks: 01) - Please choose the correct option
In C#, object and _____ are predefined reference types.

int

char

string

pointer

Question No: 11 (Marks: 01) - Please choose the correct option
Aliasing is a problem associated with reference types. What will be the value of A.count in given C# code by keeping in mind here aliasing is applied?

```
object A = new object();
```

```
A.count = 5;
```

```
object B = A;
```

```
B.count = 10
```

```
A.count = ?
```

5

Null

0

10

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Question No: 12 (Marks: 01) - Please choose the correct option

What will be the result of the given statement in C# ?

if(A = B)

B's value will be assigned to A

It will check whether A = B or not

It will check whether B = A or not

Compilation error

Question No: 13 (Marks: 01) - Please choose the correct option

If a class is required to access only in same assembly but not by other assemblies, then which keyword would be used in C#?

internal

protected

private

sealed

Question No: 14 (Marks: 01) - Please choose the correct option

In relation to an array, _____ could be declared in C#.

pointer

string

class

structure

Question No: 15 (Marks: 01) - Please choose the correct option

Which of the following syntax is correct to relate pointer "bb" with array "b"?

int [] b = {3,5,9};
int b*b = b;

int [] b = {3,5,9};
int bb* = b;

**int [] b = {3,5,9};
int *bb = b;**

int [] b = {3,5,9};
int bb = *b;

Question No: 16 (Marks: 01) - Please choose the correct option

In C#, Object Oriented Programming(OOP) is supported through _____.

classes

structures

union

enums

Question No: 17 (Marks: 01) - Please choose the correct option While overriding a method, the other overridden method must not be _____.

static

virtual

abstract

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override

Question No: 18 (Marks: 01) - Please choose the correct option
To check the type of certain operator or expression, _____ operator is used in C#.

is
type
+
:?

Question No: 19 (Marks: 01) - Please choose the correct option
Access modifiers are not available in _____ and its default access is implicitly public.

interfaces
classes
objects
abstract

Question No: 20 (Marks: 01) - Please choose the correct option
PHP stands for _____.

PHP: Hypertext Preprocessor

PHP: Hypertext Preproducer
PHP: Hypertransfer Preprocessor
PHP: Hypertransfer Producer

Question No: 21 (Marks: 01) - Please choose the correct option
Choose correct syntax to fill the blank lines in given HTML code.

```
<html>  
<head>  
<title>PHP Test</title>
```

```
_____  
_____  
</head>  
</html>  
<head>  
<html>  
</head>  
<html>  
</html>  
</head>
```

Question No: 22 (Marks: 01) - Please choose the correct option
Which form of the tag is not allowed in PHP?

```
<?php ?>  
<? ?>  
?>  
<script /script>  
<?html ?>
```

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Question No: 23 (Marks: 01) - Please choose the correct option

What will be the resultant value of a given statement in PHP?

```
$stExp = "10.0 cats " + 1;
```

11

10

1

0

Question No: 24 (Marks: 01) - Please choose the correct option

What will be the value of "a" after execution this PHP code?

```
$a = "Hello ";
```

```
$a .= "World!";
```

"Hello World!"

"Hello"

"World!"

"Hello. World!"

Question No: 25 (Marks: 01) - Please choose the correct option

"each" in PHP returns, _____ key and value pair from an array.

current element's

first element's last

element's didn't

return any

Question No: 26 (Marks: 01) - Please choose the correct option

In Java, long is a primitive data type with _____ integer.

64-bit signed

32-bit signed

64-bit unsigned

32-bit unsigned

Question No: 27 (Marks: 01) - Please choose the correct option

In Java, the finalize method serves as a kind of _____.

Constructor

Destructor

Pointer

Primitive data type

Question No: 28 (Marks: 01) - Please choose the correct option

Which of the following feature is not supported by Java language ?

Friend functions or friend classes

Short data type

Arrays

Packages

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Question No: 29 (Marks: 01) - Please choose the correct option

What is mistake in following Java code for implicit type conversion?

byte a = 12;

short b = (short) a;

Use short for a and byte for b

It is explicit type conversion

Not possible to convert a byte in to short

Change the value from 12 to 11

Question No: 30 (Marks: 01) - Please choose the correct option In Java, which of the following is not an access specifier (or modifier)?

Protocol

Public

Private

Protected

Question No: 31 (Marks: 01) - Please choose the correct option

For programming languages, if all type bindings are static, nearly all type checking can be _____.

Static

Dynamic

Overriding

Late

Question No: 32 (Marks: 01) - Please choose the correct option

The Boolean data type may be implemented as bits, but often as bytes due increased _____.

Writability

Reliability

Maintainability

Readability

Question No: 33 (Marks: 01) - Please choose the correct option

The order of operand evaluation in programming languages is a _____ issue.

Type binding

Type Compatibility

Design

Operator Overloading

Question No: 34 (Marks: 01) - Please choose the correct option

The decision about the lifetime of heap-dynamic variables is a design issue for _____.

Integers

Pointers

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Boolean
Characters

Question No: 35 (Marks: 01) - Please choose the correct option
One of the potential problems regarding Operator Overloading is _____.

Less readability
Poor Maintainability
Low Writability
Increased Expressivity

Question No: 36 (Marks: 01) - Please choose the correct option
Overflow is a kind of _____ error.

Run-time
Compile-time
Syntax
Type mismatch

Question No: 37 (Marks: 01) - Please choose the correct option
As a language designer, the decision of introducing pre-test or post-test belong to _____ loops.

Counter-controlled
Logically-controlled
Counting
User-loop

Question No: 38 (Marks: 01) - Please choose the correct option
The feature of unconditional branching is available in _____.

Ada
Java
FORTRAN

Almost all classic programming languages

Question No: 39 (Marks: 01) - Please choose the correct option
Collision is one of the problems that may arise during _____ implementation model for parameters passing.

Pass-by-value
Pass-by-result
Pass-by-data
Pass-by-array

Question No: 40 (Marks: 01) - Please choose the correct option
As a concluding remarks of this course, different programming languages can be used to solve _____ problems by utilizing _____ programming paradigms.

Same, same

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Same, different

Different, same

Different, appropriate

Descriptive Questions - 3 Marks (6 Questions)

Question No: 41 (Marks: 03)

According to the structure format of writing a class in C# language, fill in the blank of given code.

```
_____ VU { public
    _____ Main()
    { Console.WriteLine("Virtual University of Pakistan!")_____
    }
}
```

Solution:

```
class VU
{
    public static void Main()
    {
        Console.WriteLine("Virtual University of Pakistan!");
    }
}
```

Question No: 42 (Marks: 03)

Write a program in C# language to declare an integer type array "sampleArray" and assign its memory address to an integer type pointer named "samplePointer".

Note: initialize array with any of the whole number values.

Solution:

using System;

```
class Program
{
    static void Main()
    {
        int[] sampleArray = new int[] { 1, 2, 3, 4, 5 }; // declare and initialize an integer
        type array
        int* samplePointer = &sampleArray[0]; // assign memory address of first
        element of the array to the pointer

        Console.WriteLine("Memory address of sampleArray[0] = " +
        (int)samplePointer); // print the memory address of the first element of the array using
        the pointer
    }
}
```

Question No: 43 (Marks: 03)

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Write a program that prints the title as “Welcome to CS508 Course” in HTML and embed a PHP code within a paragraph tag as “This is a sample question”.

Solution:

```
<!DOCTYPE html>
<html>
<head>
    <title>Welcome to CS508 Course</title>
</head>
<body>
    <h1>Welcome to CS508 Course</h1>
    <p><?php echo "This is a sample question"; ?></p>
</body>
</html>
```

Question No: 44 (Marks: 03)

In Java, you are supposed to write code snippet for declaring two strings and concatenating them. Moreover, mention the operator name or symbol used for string concatenation.

Solution:

```
public class StringConcatenationExample {
    public static void main(String[] args) {
        String str1 = "Hello";
        String str2 = "World!";
        String result = str1 + " " + str2; // concatenate the two strings with a space in
        between
        System.out.println(result); // output the result string
    }
}
```

Question No: 45 (Marks: 03)

Identify the mistake(s) in following Java code and write the correct code.

```
public static void main( String [ ] args ) class
HelloWorld {
    {
        System.out.println("Hello world!")
    }
}
}
```

Solution:

There are two mistakes in the given Java code:

- 1) The class declaration is misplaced. It should come before the main method declaration.
- 2) The println statement is missing a semicolon at the end.

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Here's the corrected code:

```
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello world!");
    }
}
```

Question No: 46 (Marks: 03)

In programming languages generally there are four types of arrays introduced and stack-dynamic array is one of them. You are required to provide a code example of Stack-dynamic category of arrays.

Solution:

```
import java.util.ArrayList;

public class StackDynamicArrayExample {
    public static void main(String[] args) {
        // create a new ArrayList object with initial size 0
        ArrayList<Integer> stack = new ArrayList<Integer>();

        // push elements onto the stack
        stack.add(1);
        stack.add(2);
        stack.add(3);

        // pop elements from the stack
        int poppedElement = stack.remove(stack.size() - 1);
        System.out.println("Popped element: " + poppedElement);

        // peek at the top element without popping it
        int topElement = stack.get(stack.size() - 1);
        System.out.println("Top element: " + topElement);
    }
}
```

Question No: 47 (Marks: 05)

Write the results of the following expressions written in PHP.

```
<?php
    $stExp = 5+ "90.5";
    $stExp = 1 + "-1.1e3";
    $stExp = 3 + "1.3Sara";
    $stExp = 1 + "5 little kittens";
    $stExp = "10.0 cats " + 1; ?>
```

Solution:

```
<?php
    $stExp = 5+ "90.5";
    echo $stExp; // Output: 95.5
```

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```
$stExp = 1 + "-1.1e3";  
echo $stExp; // Output: -1099
```

```
$stExp = 3 + "1.3Sara";  
echo $stExp; // Output: 4
```

```
$stExp = 1 + "5 little kittens";  
echo $stExp; // Output: 6
```

```
$stExp = "10.0 cats " + 1;  
echo $stExp; // Output: 11  
?>
```

Question No: 48 (Marks: 05)

What are some of the key features of Prolog? Name any five.

Solution:

1. Declarative programming: Prolog is a declarative programming language, meaning that the programmer specifies what the program should accomplish, rather than how to accomplish it.
2. Logic-based programming: Prolog is a logic-based programming language, meaning that it operates on the principles of mathematical logic.
3. Unification and backtracking: Prolog makes use of unification and backtracking to efficiently search through a large number of possibilities.
4. Pattern matching: Prolog allows for pattern matching, which means that it can match patterns of variables to patterns of data.
5. Rule-based programming: Prolog uses a set of rules to generate solutions to problems, making it particularly well-suited to applications in artificial intelligence and natural language processing.

Question No: 49 (Marks: 05)

Explain the distinct features of LISP that were introduced first time in LISP.

Solution:

1. Lists as fundamental data structures: LISP was the first programming language to treat lists as a fundamental data type, rather than just an extension of arrays or other data structures. This allowed LISP to handle complex data structures with ease, and made it particularly well-suited for symbolic processing and artificial intelligence applications.

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2. Recursive functions: LISP was also the first language to make extensive use of recursive functions. This allowed programmers to write very powerful and flexible algorithms that could operate on complex data structures.
3. Dynamic typing: LISP introduced the concept of dynamic typing, where the type of a variable is determined at runtime rather than at compile time. This allows for greater flexibility in programming and makes it easier to write code that can handle different types of data.
4. Garbage collection: LISP was also the first language to incorporate automatic garbage collection. This means that memory management is handled automatically by the language, so programmers don't have to worry about allocating and freeing up memory.
5. Macros: LISP was the first language to include macros, which allow programmers to define new language constructs and extend the language itself. This made LISP extremely flexible and customizable, and allowed programmers to write code that was tailored specifically to their needs.

Question No: 50 (Marks: 05)

Write output of given JavaScript statements.

```
var mobiles=["iPhone", "Samsung", "Tecno", "Huawei"];
document.write(mobiles[0]); document.write("This is " +
mobiles[1]); document.write(mobiles[2]+mobiles[3]);
mobiles[0]="Lenovo"; document.write("iPhone is replaced
with " + mobiles[1]); document.write(mobiles[1]+"
"+mobiles[0]);
```

Solution:

The output of the given JavaScript statements will be:

```
iPhone
This is Samsung
TecnoHuawei
iPhone is replaced with Samsung
Samsung Lenovo
```

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