Programming Applications and Frameworks Tute - 01

Compare and contrast declarative and imperative paradigms

Declarative Programming	Imperative Programming
Declarative paradigm is describe what the problem is	Imperative paradigm is describe how to solve the problem
program has a set of statements	program has a sequence of commands
examples: PROLOG , ASP	examples : JAVA , C

Discuss the difference between procedural programming and functional programming

The procedural programming languages is used to execute a sequence of statements which lead to a result. Typically ,this type of programming languages uses multiple variables. Heavy loops and other elements ,which separates them from functional programming languages.

functional programming languages typically uses stored data, frequently avoiding loops in favor of recursive function. the functional programming's primary focus is on the return value of function ,and side effects different suggests that storing state are powerfully discouraged.

Explain the Lambda calculus and Lambda expressions in functional programming

Lambda calculus is a formal system in mathematical logic for expression computation based on function abstraction and application using variable binding substitution.

Programming Applications and Frameworks Tute - 01

Lambda expression is an anonymous function which takes some parameter.

Ex - # Declarative
      small_nums = [x for x in range(20) if x < 5]

# Imperative
      small_nums = []
      for i in range(20):
      if i < 5:
      small_nums.append(i)

What is meant by "no side-effects" and "referential transparency" in functional programming?

"no side-effects"
In a functional programming "no side-effects "means ,the result of applying some arguments to a function should only depend on the input. In other terms, applying the same input to a given function always gives the same output.

"Referential transparency"
Referential transparency is that a function or an expression is said to be referentially transparent if it can be replaced with other value without changing the behavior of a program.

Discuss the key features of Object Oriented Programming

Object - usually a person ,place or thing(a noun)
Method- an action performed by an object(a verb)
Property or Attribute - characteristics or certain object.

Programming Applications and Frameworks Tute - 01

Class- a category of similar objects ,does not hold any values of the object's attributes/properties

Abstraction- it is the act of representing the essential features without including the background details

Encapsulation- it is the wrapping of data and associated functions in one single unit

Inheritance- it is the capability of one class to inherit properties from other class

Polymorphism- it is the ability for data to be processed in more than one from

How the event-driven programming is different from other programming paradigms?

Event-driven programming paradigm in which the flow of the program is determined by events such as user actions ,sensor outputs or messages from other programs/threads.

Compare and contrast the Compiled languages, Scripting languages, and Markup languages

Compiled languages
It is the proper and formal language that has been designed to allow programmers to communicate instruction to a computer. The used language is converting by creating CPU instruction that will rewrite the input data into the desired output.

Scripting languages
Sub set of programming languages that is used to mediate between programs in-order-to generate data. Therefore, scripting language is written to control another program or programs, and sometimes take a longer time to run, since the script must be interpreted first and then run into a supporting system.

Programming Applications and Frameworks Tute - 01

Markup languages

A language designed to format text. It does the transition of raw text into structured document by using markup tags in to the raw text. The text given inside the tags are structured by the browsers depending on the markup .programming languages are compiled. But in markup languages is just interpreted by the browser.

Discuss the role of the virtual runtime machines

Stands for "Java Virtual Machine." A JVM is a software-based machine that runs Java programs. It can be installed on several different operating systems, including Windows, OS X, and Linux. JVMs allow Java apps to run on almost any computer. A Java virtual machine processes instructions similar to a physical processor. However, the Java code from a .JAVA file must first be converted into instructions the JVM can understand. While Java apps are platform independent , not all Java programs are compatible with all Java virtual machines.

Find how the JS code is executed

JavaScript is dependent following computes working together to pass and order information
The call stack
The event loop
The task queue
Web APIs/extended resources
All the global code are executed inside the global execution context. Java interpreter goes through the code twice. The first run through the code is where it does a safety check.

Explain how the output of an HTML document is rendered, indicating the tools used to display the output

Programming Applications and Frameworks Tute - 01

The <title> element is a required HTML element used to assign a title to an HTML document.HTML comments are visible to anyone that views the page source code, but are not rendered when the HTML document is rendered by a browser.

Identify different types of CASE tools, Workbenches, and Environments for different types of software systems

Individual tools – for specific task
Workbenches – multiple tools are combined, focusing on specific part of SDLC
Environments – combines many tools to support many activities throughout the SDLC

Discuss the difference between framework, library, and plugin, giving some examples

A framework is a collection of patterns and libraries to help with
building an application
Frameworks can be built of smaller frameworks is seen in
the java spring. Framework targeted at J2EE development spring

consist of over a dozen frameworks, many of which can be used on
their own or replaced by other frameworks,
.NET , JQuery , Bootstrap
A library is a collection of function / objects that serves one particular
purpose.

Use of appropriate libraries, API and framework can simplify

development,
SDK
A plugin is a way for a third party to extend the functionality of
an application.

Using JQuery as an example everything related with user

interface(scroll-bar,tool tip,date picker)

Programming Applications and Frameworks
Tute - 01