-Difference between CRM and ERP systems??

What is CRM?

In short, CRM or customer relationship management is software that manages all the ways a customer interacts with a business. Initially, CRM features were first developed for sales departments and were sometimes known as sales force automation (SFA). Other systems were soon developed to manage customer service interactions and marketing, particularly in the call center — or as it became known, the contact center, once the telephone became just another channel for customer service.

Through acquisition and development, software vendors began to combine all of these disciplines under one umbrella, called customer relationship management. Sales performance management and sales incentive compensation are also included in some CRM systems, but they're often sold separately because of their complexity.

What is ERP?

Enterprise resource planning (ERP) evolved out of material requirements planning (MRP), which was a way for manufacturers to understand and manage all the resources needed to operate a successful business. ERP serves as a shared database to all the parts of an organization. At its core, this means finances, including the general ledger (GL), accounts payable, accounts receivable, payroll and financial reporting.

But ERP also extends to inventory management, order management, supply chain management and data related to services organizations. ERP touches on procurement, production, distribution and fulfillment as well. Some ERP systems also offer Human Resources Management Systems (HRMS), CRM and ecommerce.

Difference between CRM and ERP

While the entire organization will come to rely on both ERP and CRM systems, the fundamental difference between ERP and CRM is that ERP is primarily for financial data and the finance department, while CRM is customer data used by the sales and customer service departments. The former is commonly referred to as the back office, and the latter is the front office.

Some ERP systems include a CRM component, while others do not, but CRM software systems do not include ERP components. For example, Salesforce.com is not an ERP system because it does not handle transactional data. It may access order history or invoices, but that data is brought in through an integration with the ERP system.

-What is off the shelf software ?

"Software off the shelf" (SOTS) is a term used to describe pre-built software applications that are commercially available and can be purchased and used by an end-user or an organization. SOTS is also known as "commercial off-the-shelf" (COTS) software.

SOTS applications are designed to be generic and serve a wide range of users or industries. They are typically not customized to meet specific business requirements or needs. Examples of SOTS applications include Microsoft Office, Adobe Photoshop, and antivirus software.

SOTS applications can offer several advantages over custom-built software, such as lower cost, faster implementation, and a larger user base with a wider range of support and resources available. However, they may also have limitations in terms of functionality and flexibility, and may not fully meet the unique needs of a specific business or industry.

-How to write Clean code

1 -Follow a consistent coding style: Use a consistent coding style and formatting to make your code easy to read and understand. This includes things like indentation, variable naming conventions, and commenting.

2 -Keep functions short: Functions should be as short as possible, ideally no more than a few lines of code. This improves readability and makes it easier to test and debug your code.

3 -Use meaningful variable names: Use descriptive variable names that accurately reflect the purpose of the variable. Avoid using single-letter variable names or abbreviations that may be unclear or confusing.

4 -Minimize duplication: Avoid duplicating code by creating reusable functions or classes. Duplicated code can lead to inconsistencies and errors.

5 -Write self-documenting code: Write code that is easy to understand without the need for excessive comments. Use meaningful function and variable names, and structure your code in a logical way.

6 -Test your code: Write tests for your code to ensure that it works as intended and to catch any errors or bugs. This also helps to ensure that your code is maintainable and can be extended in the future.

7- Refactor as needed: Refactor your code as needed to improve readability, reduce duplication, and improve performance. This can help to ensure that your code remains clean and maintainable over time.

-When I need to slow my code ?

Debugging: When you're debugging your code, you may need to slow it down to better understand what's happening. This can be done by adding print statements, breakpoints, or other debugging tools to your code.

Timing: If your code is running too fast, you may need to slow it down to accurately measure its performance or to synchronize with other parts of your system.

Resource usage: If your code is consuming too many system resources, you may need to slow it down to prevent overloading the system. This can be done by adding delays or sleep statements to your code.

Animation: If you're creating animations or visualizations, you may need to slow down your code to ensure that the animation is smooth and fluid. This can be done by adjusting the frame rate or adding delays between frames.

User interaction: If your code is interactive or requires user input, you may need to slow it down to give the user time to respond. This can be done by adding delays or wait statements to your code.

-How to reverse priority Queue

to reverse the priority of a priority queue is to change the sign of the priority value. For example, if your priority queue contains integers and you want to reverse the order, you can multiply each integer by -1. This will reverse the order of the elements, so that the highest priority elements will be the ones with the lowest integer values.

-BFS and DFS in terms of space

BFS requires more space because it needs to store the nodes in the frontier queue as it traverses the graph. The size of this queue can grow rapidly, particularly in graphs with many branching paths or cycles. The space complexity of BFS is O(b^d), where b is the branching factor of the graph and d is the depth of the solution.

DFS uses a stack to keep track of the nodes to be explored, which can be implemented recursively or using an explicit stack data structure. The space complexity of DFS depends on the maximum depth of the search tree, which can be much smaller than the number of nodes in the graph. In the worst case, the space complexity of DFS is O(d), where d is the depth of the solution.

-Languages that supports multiple inheritance

- c++ , python , c , R , perl

-How to make password encrypted or invisible in python

Using Maskpass library

Or Getpass

-How to make unordered set and multiset in python

Unordered Set: An unordered set is a collection of unique elements, where the order of the elements is not important. In Python, you can create an unordered set using the built-in set() function.

Multiset: A multiset is a collection of elements that allows duplicates. In Python, there is no built-in multiset data structure, but you can use third-party libraries like collections or multiset to implement a multiset. The collections module provides the Counter class, which can be used to create a multiset. The Counter class returns a dictionary-like object with the elements of the list as keys and their count as values.

-What’s hash map ?

A hash map, also known as a hash table, is a data structure that allows for efficient lookup, insertion, and deletion of key-value pairs. It works by using a hash function to map each key to a unique index in an array. The value associated with the key is then stored in that index.

When a key is inserted into the hash map, the hash function is applied to the key to determine its corresponding index in the array. If the index is already occupied by another key-value pair, a collision occurs. There are different collision resolution techniques to handle collisions, such as open addressing or chaining.

Hash maps have a constant time complexity for average-case lookups, insertions, and deletions, making them a popular choice for implementing associative arrays, sets, and caches. However, worst-case scenarios can occur when there are many collisions and the hash table needs to be resized, which can result in a longer time complexity.

In Python, the built-in dict type is implemented as a hash map, and you can also use the collections module to create hash maps with additional functionality, such as ordered dictionaries or default dictionaries.

-What’s the difference between map in c++ and dictionary in python and which is faster?

A dictionary: is a data structure representing a set of elements, with insertion, deletion, and tests for membership; the elements may be, but are not necessarily, composed of distinct key and value parts

A map: is an associative data structure able to store a set of keys, each associated with one (or sometimes more than one - e.g. C++ multimap) value, with the ability to access and erase existing entries given only the key.

In terms of performance, the time complexity of basic operations such as lookup, insertion, and deletion is **O(log n) for map** in C++ and **O(1) for dictionary** in Python on average. However, worst-case scenarios can occur for both data structures, such as when there are many collisions for a dictionary or when the map needs to be rebalanced. The actual performance can also depend on the specific use case, the size of the data, and the hardware being used.

In general, both map in C++ and dictionary in Python are efficient and widely used data structures for storing key-value pairs. The choice between them can depend on the specific requirements of the task at hand, such as the need for sorting or the simplicity of syntax.

so on avg dictionary is faster than map

-Types of maps in c++

std::map: This is the most commonly used map type in C++. It is an ordered associative container that stores key-value pairs sorted by the keys. It uses a binary search tree to provide fast lookup, insertion, and deletion of elements. The keys are unique, and the values can be any type.

std::multimap: This is a variation of std::map that allows for multiple values to be associated with the same key. It is also an ordered container, and the keys are unique, but the values can be duplicates.

std::unordered_map: This is an unordered associative container that stores key-value pairs using a hash table. It provides fast lookup, insertion, and deletion of elements, but the order of the elements is not guaranteed. The keys are unique, and the values can be any type.

std::unordered_multimap: This is a variation of std::unordered_map that allows for multiple values to be associated with the same key. The keys are unique, but the values can be duplicates.

-What’s CRUD operations ?

is the acronym **for CREATE, READ, UPDATE and DELETE.** These terms describe the four essential operations for creating and managing persistent data elements, mainly in relational and NoSQL databases.

-Whats Oodo?

it is an open-source enterprise resource planning (ERP) software that provides a suite of business applications for managing various aspects of a company's operations, such as accounting, inventory management, sales, customer relationship management, and project management. Odoo is written in Python and offers a modular structure that **allows users to install and customize only the applications they need.** It is available in both a free Community edition and a paid Enterprise edition, and is used by businesses of various sizes and industries around the world.

-Language that combines python and C ?

Cython is a superset of Python that allows you to write Python code that can be compiled into C code, which can then be compiled into a native extension module that can be imported and used in Python code. Cython provides features such as static type declarations, C function declarations, and direct access to C libraries, which can improve performance and allow for easier integration with existing C code. Cython code can also be compiled into standalone executables, making it a useful tool for creating high-performance applications that require the speed of C with the ease of use of Python.

-Programming languages coded in Arabic ?

Amuriyah- Arabic language open source, object-oriented

Lugo Arab - Arab Programming is based on the language of Lugo language. Directed to children by the way, not the language of the establishment of programs, it is the language of logical drawing aims to teach children programming logic

¨JIM- Arabic language programming depends on the formulation similar to the C ++ language with graphical capabilities, Muhammad Ammar Asalkh site design language.

LOGHATY My Arab programming language has its own multiple goals coordinated.

ANKAA - Arab procedural programming language similar to the language C.

KALIMAT - a language similar to Arabic programming language C.

Qalb – is a functional programming lang

-Machine learing and Deep learning libraries made with javascript ?

- TensorFlow.js: TensorFlow.js is a JavaScript library for training and deploying machine learning models in the browser and on Node.js. It provides high-level APIs for common machine learning tasks, as well as low-level APIs for building custom models.
- Brain.js: Brain.js is a JavaScript library for building neural networks. It provides a simple and easy-to-use API for creating and training neural networks, as well as support for both CPU and GPU acceleration.
- ConvNetJS: ConvNetJS is a JavaScript library for training and deploying deep learning models in the browser. It provides a high-level API for building convolutional neural networks, as well as support for GPU acceleration.
- Synaptic: Synaptic is a JavaScript library for building and training neural networks. It provides a modular architecture that allows for easy customization and extension, as well as support for both CPU and GPU acceleration.
- Keras.js: Keras.js is a JavaScript implementation of Keras, a popular deep learning framework. It provides a high-level API for building and training deep learning models, as well as support for both CPU and GPU acceleration.
- Neoro.js : It is a renowned JS library for training and developing deep learning models in JS and can easily be deployed in the web browser or Node.js. In addition to this, it supports online learning, multi-label classification, as well as real-time classification of website development and can be used to create artificial intelligence based chatbots and assistants.
- Synaptic : This JavaScript Library also helps in the development of neural network models in the web browser or Node.js. The generalized algorithm of this library is architecture-free; therefore, one can easily train and create basically any type of first or second-order neural network architectures.
- M1.js : It is a complete general-purpose library of Machine Learning which is written in JavaScript. The library is a compilation of the wide array of tools that are developed in the mljs organization. However, it is primarily coded for use in the web browser, the developers may add their own dependencies to use this library in the Node.js as well: those that are labeled with ml; therefore, pretty easy to find. This JS based machine learning library supports the various routines such as sorting, bit operations on arrays, random number generation; hash tables, array manipulation, linear algebra, statistics; optimization, cross-validation, unsupervised and supervised learning.

-How to connect (interact) many programming languages in one code or project ?

- Using web APIs: One way to connect multiple programming languages is by using web APIs. You can create an API in one language, such as Python, and then call that API from another language, such as JavaScript or C++. This allows you to share data and functionality between different languages.
- Using message passing: Another way to connect multiple programming languages is through message passing. This involves sending messages between different languages using a protocol such as JSON or XML. This allows you to communicate between different languages without having to integrate them directly.
- Using libraries and frameworks: Many programming languages have libraries and frameworks that allow you to interface with other languages. For example, Python has the ctypes library, which allows you to call C functions directly from Python, and Java has the Java Native Interface (JNI), which allows you to call C functions from Java.
- Using middleware: Middleware is software that sits between different applications and facilitates communication between them. You can use middleware to connect multiple programming languages by having each language communicate with the middleware, which then relays the messages between them.

-What’s Diamond inheritance?

- Diamond inheritance, also known as the diamond problem, is a common issue that can occur in object-oriented programming when a subclass inherits from two separate superclasses that share a common superclass. This creates a diamond-shaped inheritance hierarchy, hence the name.
- diamond inheritance is a common issue in object-oriented programming that can lead to ambiguity and errors, but can be resolved through careful design and the use of appropriate language features.
- The problem arises when the subclass tries to inherit conflicting or ambiguous behavior from the two superclasses. For example, if both superclasses define a method with the same name, the subclass may not know which version of the method to use. This can lead to errors or unexpected behavior.
- To resolve the diamond problem, some programming languages provide mechanisms such as virtual inheritance or interface inheritance, which allow for more precise control over how inheritance is handled. In virtual inheritance, the common superclass is shared between the two superclasses, so that the subclass only inherits one copy of the common superclass. In interface inheritance, the subclass inherits only the method signatures from the two superclasses, and must provide its own implementation.