Prompts

1. What are the four pillars of Object-Oriented Programming? Explain each pillar.

   The four pillars of Object-Oriented Programming are data abstraction, encapsulation, inheritance, and polymorphism. Object-Oriented Programming (OOP) is all about simplifying code. Simplifying code comes down to two items. Item 1 is to keep your code as short as possible. Item 2 is to keep it as readable as possible. Keeping code as short and readable as possible can be simplified so it is easy for others to understand. This is important because you are not the only one reading your code therefore when it comes to objects, we have the pillars of OOP.

   Data abstraction certainly meets the standard of simplifying code because its main objective is to hide all unnecessary details of an object's internal structure. This keeps all unnecessary information separate from the behavior of the object making the code easier to understand.

   Encapsulation is the art of enclosing something in a capsule. It uses classes that contain all of the code of a specified subject creating a state or a time-oriented position that represents the object at a certain time in a capsule for later use. The idea is to restrict what your code can access if they are not needed. In this way, encapsulation keeps your code simpler and easier to understand.

   Understanding inheritance is almost as simple as understanding the definition of inheritance. An inheritance is a child receiving something from a parent. This is exactly how it works in code. It allows the parent class(prototype) to provide information to several children (subclasses). The child class refers to the parent class and utilizes it minimizing the need for duplicate code.
   The pillar of inheritance helps to ensure a logical flow of code and increases readability saving the developer and reviewer significant time.

   Polymorphism means many forms. Polymorphism allows the sharing of behaviors like inheritance; however, it is not the same. Polymorphism is like inheritance because uses pattern design which is a key indicator to the coder that there may be an opportunity to use polymorphism or inheritance to enhance the readability and simplicity of their code. Polymorphism differs from inheritance in that it applies to functions or methods while inheritance applies to classes. Polymorphism allows objects to decide which of the poly forms to use in coordination with the methods and attributes of a class.

2. What is the relationship between a Class and an Object?

   Before getting into the relationship between class and object the definitions are a must. Class defines the properties and behaviors of objects. It is essentially a blueprint for an object. Objects differ from a class because they are real-world entities and occupy memory. Objects contain properties and methods.

   The relationship between class is in the definition of class. Classes define the properties and behaviors of objects.

3. What is an exception and what are the best practices for handling them?

   An exception is an object that represents an error. Handling exceptions is really the handling of errors. It involves determining the error and explaining why the error occurred.

Some of the best practices for handling exceptions found all over the internet are as follows:

1. Accept that your code will fail.
2. Plan for expected failures.
3. Ensure errors are logged to the server.
4. The coder, not the browser handles potential errors.
5. Make your errors.
6. Separate fatal and non fatal errors.
7. Offer a debug mode.
8. Only use promise callbacks
9. Check for errors
10. Handle errors as early as possible
11. Use try/catch/finally block to catch incoming errors
12. Solve your errors with your code, not the browser or try/catch/finally blocks.
13. Design classes to minimize errors.

Instructions

As developers, research is a constant part of our job. A common saying is that 90% of software development is Googling, and while that is an exaggeration, Google is a highly used tool in the role. This Research assignment is meant to go beyond the course curriculum and increase your understanding of relevant topics while exposing you to online resources you'll frequently use on the job. Please write a paragraph for **two (2)** of the above prompts and include URLs from where you found the information to cite your sources. Do not copy and paste text from the internet or any other source; use the information you find in your research, summarize, in your own words, the concepts. Plagiarism will result in a zero for the assignment as well as disciplinary actions.

This assignment is graded based on participation.

Reminder: Create a .pdf file with your research findings (.pdf is the only accepted file type).

- To save as a .pdf, go to Save As or Export, then choose the file type .pdf. This will save a new version of your document as a .pdf.

- If you have a Mac and use Pages, please make sure to export the final version of the document to a .pdf before submitting.