1) What are the errors that arises while implementing the algorithm?

- Syntax error:

Any violation of rules and poor knowledge of the programming languages results in syntax errors which is detected by compiler. Sometime a single syntax error can results in the long list of error and can be removed all the errors by simply correcting single syntax error.

In python programming language,

Correct syntax: print ("Hello World")

Incorrect syntax: display ("hello world ']

Incorrect syntax will produce a syntax error.

- Logical error:

Logical errors cannot be detected by the compiler and cause incorrect results. It is due to the lack of correct translation of algorithm into program and lack of clarity of role of operation.

For example:

Creating an algorithm of adding salary and writing a program of subtracting salary which produces logical error.

- Run-time error:

It is the error that arises during the execution of program. Example dividing by zero error, referencing an out ranged array element. A program with these kind of errors will run but produce erroneous results or terminate the program

For example:

A program trying to divide any number by zero will produce a run time error.

2) What is API? Why it is important in effective programming ? Explain the implementation procedure of API in programming

API stands for application programming interface, a concept that applies everywhere from command-line tools to enterprise Java code to Ruby on Rails web apps. An API is a way to programmatically interact with a separate software component or resource.

It is important to evaluate the software's API. A well-written API can provide some very important long- term benefits. Here are a few:

- Some APIs, like the Reddit and Spotify APIs, are designed to expand the reach of the organization by making their data available to users, and enabling external developers to build products that are in some way reliant on the business, and so keep customers coming back. For example, Spotify featured the "artist explorer" in the hopes that users will find new artists, build new playlists, and therefore continue (or start) using Spotify.

- Because the APIs simply provide data, there are no limits on how a company can then go on to use that data. Furthermore, these programs can be automated to run on a schedule reducing the need for someone to navigate the complex steps of exporting data manually via the Salesforce web interface. As businesses scale up, many find that the initial cost of building such an integration can save employees time and sanity by removing the need to interact regularly with a complex and sometimes frustrating web interface.

- Another benefit of Web APIs is that, because they are built around the HTTP protocol, nearly any programming language can be used to access them. Python, R, Java, JavaScript, Ruby, and every other general purpose programming language has at least one HTTP library to make this process easier. However, more specialist languages like SQL do not have HTTP libraries.

How do APIs work?

Imagine a waiter in a restaurant. You, the customer, are sitting at the table with a menu of choices to order from, and the kitchen is the provider who will fulfill your order.

You need a link to communicate your order to the kitchen and then to deliver your food back to your table. It can't be the chef because she's cooking in the kitchen. You need something to connect the customer who's ordering food and the chef who prepares it. That's where the waiter — or the API — enters the picture.

The waiter takes your order, delivers it to the kitchen, telling the kitchen what to do. It then delivers the response, in this case, the food, back to you. Moreover, if the API is designed correctly, hopefully, your order won't crash!