Question 1:

Python code to generate numbers from 1 to 100 using an array is:

def generate\_numbers\_array():

numbers = []

for i in range(1, 101):

numbers.append(i)

return numbers

if \_\_name\_\_ == "\_\_main\_\_":

# Using an array to generate numbers

array\_numbers = generate\_numbers\_array()

# Printing numbers

print("Array Numbers:")

print(array\_numbers)

Python code to generate numbers from 1 to 100 using linked list is:

def generate\_numbers\_linked\_list():

numbers = []

for i in range(1, 101):

numbers.append(i)

return numbers

if \_\_name\_\_ == "\_\_main\_\_":

# Using a linked list to generate numbers

linked\_list\_numbers = generate\_numbers\_linked\_list()

print("\nLinkedList Numbers:")

print(linked\_list\_numbers)

Advantages and Disadvantages:

Array Approach:

Advantages

1. By using their indices, arrays enable quicker random access to elements.
2. In Python and Java, array creation and use are simple.
3. Due to their contiguous memory allocation, arrays are typically more memory-efficient than linked lists.

Disadvantages:

1. Arrays are less versatile since you must know the size in advance because they have a set size.
2. Compared to linked lists, inserting or removing entries in the midst of an array is less effective.
3. Memory is wasted if a huge array is allocated but only a small piece of it is used.

Linked list approach:

Advantages:

1. Since linked lists allocate memory for each entry separately, they can readily expand or contract as needed.
2. Since just a few references need to be changed, adding or removing elements from a linked list is quicker than from an array.
3. Due to their fixed size, linked lists do not experience memory leaks.

Disadvantages:

1. Since you must start at the beginning of the linked list to access an element, it takes longer than with an array.
2. Compared to arrays, linked lists can be more difficult to implement and use.
3. Because references to the following element must be stored, linked lists involve a modest memory penalty.

Question 2:

Due to the basic differences in their data structures and the manner in which elements are stored and accessed, deletion in a linked list is often faster than in an array in Java. Some of them are:

1. No shifting Elements:

* In a linked list, you merely need to change the references (points) of the previous node to point to the node following the deleted one when deleting an element from the middle. Other components don't need to be moved around.
* When one element from the centre of an array is deleted, all the elements that follow it must be shifted in order to cover the empty space left by the deleted element. This results in a slower procedure because elements must be copied and moved.

1. Constant-Time Deletion in a Singly Linked List:

* In a singly linked list, deletion is often a constant-time (O(1)) operation if you have references to both the node you wish to remove and the one before it. To avoid the deleted node, you need to update the reference to the prior node.
* As shifting elements is an O(n) operation in an array, where n is the number of elements in the array, deleting one element in the centre of the array necessitates shifting other members.

1. Flexibility in Size:

* Linked lists are dynamic data structures with easy size expansion and contraction. The general organisation or memory use of the list are unaffected by the deletion of an element.
* If the array is larger than necessary, deleting an element may result in wasted space because arrays have a predetermined size. The process of resizing an array (using, for instance, Java's ArrayList) entails making a new array, copying its contents, and deallocating the old one. This can be a time-consuming process.

Question 3:

I’ve worked on an E-commerce website where users can buy women’s clothes. There are provided categories of the clothes so that users can search desired clothes according to the categories of clothes. First, users have to sign up. If they have already signed up then they have to login into the website. They will lead to the dashboard of the website where categories of clothes are shown. They can select any categories as per their desire. Then they can buy clothes. Admin login is separate. Admin can login and can perform insertion and deletion of products as required. This project is based on HTML, CSS, MYSQL and php.

The code repository where it is hosted is “https://github.com/dina59/Project-I”.

I’ve worked on another project called ‘Heart Disease Prediction System’. In this project, users can predict whether they have the risk of heart disease or not. This project is not 100% accurate but it has an accuracy of 88%. Users have to sign up and login into the system. They are provided with the form which users have to fill compulsory inorder to predict. After filling the form users have to click the predict button and the system predicts whether users have heart disease or not. Since the project is not 100% accurate they provide a risk of having heart disease. This project is based on Machine Learning, Python, HTML,CSS and Streamlit.

The code repository where it is hosted is “https://github.com/dina59/Project\_6”.

Question 4:

You can use built-in methods or procedures in Python or Java to change an iterator into a list.

Example for java is:

import java.util.ArrayList;

import java.util.Iterator;

import java.util.List;

public class IteratorToList {

public static void main(String[] args) {

List<Integer> list = new ArrayList<>();

list.add(1);

list.add(2);

list.add(3);

// Convert an iterator to a list

Iterator<Integer> iterator = list.iterator();

List<Integer> convertedList = new ArrayList<>();

while (iterator.hasNext()) {

convertedList.add(iterator.next());

}

System.out.println("Converted List in Java: " + convertedList);

}

}

In this Java example, we generate an iterator from a list, and then we iterate through the components of the iterator and add them to a new list to transform the iterator back into a list.

Example for python is:

my\_iterator = iter([1, 2, 3])

# Convert an iterator to a list

converted\_list = list(my\_iterator)

print("Converted List in Python:", converted\_list)

It's even simpler in Python. You can instantly create a list from an iterator by using the list() constructor.

Question 5:

Semicolons are used to end statements in Java, and leaving them out is not common practise. However, there are other unconventional—though not advised—methods for printing "Hello World" that can be used instead of a semicolon.

Code:

public class HelloWorldWithoutSemicolon {

public static void main(String[] args) {

if (System.out.printf("Hello World") == null) {

}

}

}

Explanation of the approach:

1. The phrase "Hello World" is printed to the standard output using System.out.printf("Hello World"). The standard output is where the supplied string is printed using the printf method.
2. The PrintStream object (‘System.out’) that the printf call returns is not null. As a result, the condition in the if expression evaluates to false. To avoid using a semicolon at the conclusion of the statement, you can use this.

Although this code doesn't use semicolons and technically functions, it is seen as an unconventional and convoluted method. In practical Java programming, it should be avoided because it makes the code harder to read. For clarity and maintainability, semicolons are a crucial component of Java's grammar and coding rules for statement termination.

Question 6:

Developed by ThoughtWorks and the Partners In Health (PIH) group, Bahmni is an open-source healthcare software platform. In low- and middle-income nations, in particular, it is intended to address the healthcare requirements of underserved and resource-constrained situations. With Bahmni, healthcare facilities like hospitals, clinics, and primary care clinics will be managed using an integrated and all-encompassing solution.

Here are some key features and findings about Bahmni:

1. Modular Architecture:

Bahmni has a modular architecture that enables medical facilities to modify the system to meet their unique requirements. The platform is made up of a number of modules, such as electronic medical records (EMR), patient registration, appointment scheduling, laboratory management, pharmacy, and others.

1. Integration:

Radiology systems and laboratory information systems (LIS) are just a couple of the healthcare information systems that Bahmni is made to interact with. Through this connectivity, patient data can be shared between several departments, increasing the effectiveness of healthcare services.

1. User-Friendly:

Bahmni focuses on giving healthcare personnel an intuitive and user-friendly interface. This is crucial in environments with limited resources where workers may lack considerable expertise in sophisticated software systems.

1. Open Source:

Bahmni is available for anybody to use, modify, and distribute for free because it is open-source software. This is in line with the objective of improving access to and affordability of healthcare technology, particularly in underprivileged areas.

1. Community Support:

Users and developers from the expanding Bahmni community work together to enhance and expand the platform. The software will continue to be developed and supported thanks to this community-driven strategy.

1. Continued Development:

Bahmni's development is ongoing, and updates are frequently published to improve its capabilities and fix any problems that may arise.

In conclusion, Bahmni is an open-source healthcare software platform created to meet the special requirements of healthcare facilities in environments with limited resources. It is an effective tool for managing patient information and enhancing healthcare delivery in underserved areas due to its modular and integrated approach, user-friendliness, and community support. But it has setup and customization issues, just as with any software implementation.

Question 7:

JavaScript allows you to reverse a string by breaking it into an array of characters, flipping the array, and then connecting the characters back together to form the original string. The JavaScript function to perform this is as follows:

function reverseString(inputString) {

// Convert the input string to an array of characters

var charArray = inputString.split('');

// Reverse the array

charArray.reverse();

// Join the characters back into a string

var reversedString = charArray.join('');

return reversedString;

}

// Example usage:

var input = "Hello, World!";

var reversed = reverseString(input);

console.log(reversed); // Output: "!dlroW ,olleH"

In this function, the input string is split into an array of characters using *split(‘’)*, the array is reversed using ‘*reverse()*’, and the reversed string is produced by joining the characters back together using *join(‘’)*.

Question 8:

To get information from a public JSON API, parse the JSON answer, and log the outcome to the console, you can utilise JavaScript Promises in conjunction with the fetch API. Here is an illustration of a function that does this:

function fetchDataAndLog(url) {

return new Promise((resolve, reject) => {

fetch(url)

.then((response) => {

if (!response.ok) {

throw new Error('Network response was not ok');

}

return response.json();

})

.then((data) => {

console.log('Fetched and parsed data:', data);

resolve(data);

})

.catch((error) => {

console.error('Error:', error);

reject(error);

});

});

}

// Example usage:

const apiUrl = 'https://jsonplaceholder.typicode.com/posts/1'; // Replace with your API URL

fetchDataAndLog(apiUrl)

.then((result) => {

// Do something with the result if needed

})

.catch((error) => {

// Handle any errors

});

In this function:

1. In order to capture the data retrieval and processing, we establish a new Promise.
2. We send a request to the given URL from the *‘fetch’* API contained in the Promise.
3. Using response, we determine whether the response is OK(status code 200) using *‘response.ok’* , and if not, we refuse the Promise with a fault.
4. *‘response.json()’* is used to parse the JSON data in the response if the response is OK.
5. We resolve the Promise using the parsed data after logging the parsed data to the terminal.
6. We monitor the process for mistakes, log them, and reject the Promise if they happen.

If you want to retrieve data from a public JSON API, you can call this function using its URL. The function outputs a Promise that can be used and resolves with the parsed data.either use *‘.then()’* to handle the data or *‘.catch()’* to deal with mistakes.

Question 9:

The git repository is “<https://github.com/dina59/Assignment>”.