**Java Assignment Questions.**

1. The Fibonacci sequence is defined by the following rule: The fist two values in the

sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it.

Write a Java program that uses both recursive and non recursive functions to print the nth

value in the Fibonacci sequence. **(Fibonacci.java)**

2. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer. **(Prime.java)**

3. Implement the complex number ADT in Java using a class. The complex ADT is used to represent complex numbers of the form c = a + ib, where a and b are real numbers. The operations supported by this ADT are:

a)Reading a complex number. b)Writing a complex number. c)Addition of two complex numbers.d)Multiplication of two complex numbers. **(complex.java)**

4. Write a Java program to illustrate method overloading.(Ex. Write functions for finding the

maximum of two and three numbers. **(methodOverloading.java)**

5. Write a Java program to find both the largest and smallest number in a list of numbers.

**(minMax.java)**

6. Write a Java program that uses both recursive and non recursive linear search functions to

search for a character key in a list of characters. **(linear search.java)**

7. Write a Java program to implement the matrix ADT using a class. The operations supported by this ADT are:

a)Reading a matrix. b)Addition of two matrices. c)Printing a matrix.

d)Multiplication of two matrices. **(matrix.java)**

8. Write a Java program that uses functions to perform the following:

i)sorts a list of integers in ascending order using bubble sort.

ii)then searches for a key value(integer) non recursively in the above sorted list

using binary search. **(SortAndSearch.java)**

9. Write a Java program that uses functions to perform the following:

i)sorts a list of integers in ascending order using insertion sort.

ii)then searches for a key value(integer) recursively in the above sorted list

using binary search. **(InsSortAndBinSearch.java)**

10. Write a Java program that uses functions to perform the following:

i)sorts a list of integers in ascending order using selection sort.

ii)then searches for a key value(integer) non recursively in the above sorted list

using binary search. **(SelectionSort.java)**

11. Write a Java program that uses functions to perform the following:

i)sorts a list of names in ascending order using bubble sort.

ii)then searches for a key value(name) non recursively in the above sorted list

using binary search. **(NameListSort.java)**

12 . Write a Java program that sorts a list of integers passed from the command-line in ascending

order using bubble sort. **(CmdSort.java)**

13. Write a Java program that uses both recursive and non recursive functions to check whether a given string is a palindrome or not. Ex: MADAM is a palindrome. **(palindrome.java)**

14.Write a Java program that prompts the user to enter a string and counts the number of

occurrences of each letter in the string. **(LetterCount.java)**

15. Write a Java program to make frequency count of words in a given text. **(FrequencyOfWords.java)**

16. a)Write a Java program that reads a file name from the user, then displays information about

whether the file exists, whether the file is readable, whether the file is writable, the type of

file and the length of the file in bytes. **(FileA.java)**

b)Write a Java program that reads a file and displays the file on the screen, with a line

number before each line. **(FileB.java)**

c)Write a Java program that displays the number of characters, lines and words in a text file.

**(FileC.java)**

d)Write a Java program to change a specific character in a file.

Note: Filename , number of the byte in the file to be changed and the new character are

specified on the command line. **(FileD.java)**

e)Write a Java program that copies the contents of one file to another. File names are passed

as command-line arguments. Program should handle the exceptions that may arise during

the file operations.**(FileE.java)**

f)Write a Java program that reads names/numbers from a file, sorts them in ascending order,

and writes them to another file. **(FileF.java)**

17. Write a Java Program that reads a line of integers, and then displays each integer, and the

sum of all the integers. (Use StringTokenizer class of java.util and its methods) **(StringOfIntegers.java)**

18. Write a class in Java to represent a bank account. The class contains name of the

account holder, account number, and balance amount as the data members. The class

contains the member functions that allow us to have a starting balance, make

deposits, make withdrawals, and get the current balance. Write appropriate methods.

If insufficient funds are available, the program should raise an exception. Use your

own exception class(custom exception class) and handle the exception. **(BankAccount.java)**

19. Write a Java program that has an abstract class Polygon with two abstract methods

area() and perimeter(). Derive three classes Rectangle, Square, and Triangle from

Polygon class.Write methods to get the details of their dimensions and hence

calculate their areas and perimeters The sub classes should override the two abstract

methods (area() and perimeter()) by providing appropriate implementations.

Demonstrate polymorphism. **(polygon.java)**

20. Write a class for stack in Java. The class should have the methods, push(),pop(),isEmpty(),

isFull() and size().Use an array representation for the stack. Write a Java program that reads

a list of integers, uses the above stack methods and displays list of integers in reverse order. **(Stack.java)**

21. Write Java program that uses functions to perform the following operations:

a)create a singly linked list of integers.

b)traverse the above list and display its contents.

c)delete an integer from the above list and display the contents of the list after deletion.**(LinkedListt.java)**