Assignment – 1
Spring – 2021

Q.1/

```
Package com.shadmansakib ;
import java.lang.Math ;

Public class Main {

   Public static void main (string[] args) {

      System.out.println (" Index | Iterative | Recursive ");

// while loop to call Methods for 20 times
      int n = 0 ;
      while (n <= 20) {
// formatting and method call
      system.out.printf ("%2d  %.20.2f  %.20.2f \n", n ,
                              doIteration(n) , doRecursion(n));
      n++ ;
      } // close loop

   } // close main

   Public static doube doRecursion (int n){
      if (n<=0) {
         return 0;
      }
      if (n ==1) {
         return 1;
      }
```

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```
if (n == 2) {
    return 3;
}
if ((n > 2) && (n % 2 != 0)) {
    return Math.sqrt (doRecursion(n-1)) +
           Math.pow((doRecursion(n-2)), (double) 1/(n-2));
}
if ((n > 2) && (n % 2 != 0)) {
    return Math.pow (doRecursion(n-1), 1.000001);
}

return 0;
} // close method

Public static double doIteration (int n) {
    if (n <= 0) {
        return 0;
    }
    if (n == 1) {
        return 1;
    }
    if (n == 2) {
        return 3;
    }
```

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```
while (n >= 3) {
  if (n % 2 == 0){
     // unaware how to do...
  } else {
     // unaware how to do...
  }
  n++;
 }
 return 0;
} // closing method
} // closing ~~method~~ class
```

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Q.2/ Java is a high-level language, i.e it is a language that was created to simplify computer programming. It is english-like and thus, easy to grasp for us humans, but computers are not able to understand this language. For the instructions written in Java to be executed, the code has to be first translated to machine language i.e conversion to binary form.

A program written in Java code is called the source program or source code. To translate this source code into machine language, an interpretor or compiler is necessary. These are both programming tools used to read and translate source code to binary output, and then execute it.

In interpretation, the interpretor reads one statement from the source code at a time, and translates it to machine code immediately. It proceeds to execute the output right after the translation of a single statement.

In compilation, the compiler reads the entire source code and then translates it to machine language. The machine-code file is then executed by an executor. compilation is faster than interpretation as it does not analyze each statement at a time.