1. (13 points)Give a brief answer for each of the following questions:
2. What is the difference between an interpreted language and a compiled language?
   1. **An interpreter will read each statement from the source code and translate it to machine code and execute it right away. A compiled language will translate the entire source code to machine code which can then be executed when the user pleases.**
3. What does JDK stand for? What does JRE stand for?
   1. **JDK(Java Development Kit): a set of programs which are invoked from the command line, for compiling, running, and testing Java programs.**
   2. **JRE(Java Runtime Environment): the program which runs the java programs.**
4. What is the Java source filename extension, and what is the Java bytecode filename extension?
   1. **The Java source filename extension is .java, and the bytecode filename is .class .**
5. What is the command to compile a Java program?
   1. **javac [program-name.java]**
6. What is the command to run a Java program?
   1. **java [program-name]**
7. Explain the two compilation phases of Java programs.
   1. **During the first phase java code is compiled into bytecode. In the second phase bytecode is read and interpreted into machine code.**
8. Show the output of the following code:

**double** amount = 5;

System.out.println(amount / 2);

System.out.println(5 / 2);

**OUTPUT:**

**2.5**

**2**

1. What data types are required for a switch variable? If the keyword break is not used after a case is processed, what is the next statement to be executed?
   1. **The data types required for a switch variable are char, byte, short, or int.**
   2. **If the keyword break is not used the next case statement will be executed.**
2. What is y after the following switch statement is executed? Rewrite the code using an if-else statement.

x = 3; y = 3;

**switch** (x + 3) {

**case** 6: y = 1;

default: y += 1;

}

* 1. **After the above switch statement y is equal to 2.**
  2. **Rewrite the code**

x = 3; y = 3;

if(x + 3 == 6) {

y = 1;

}

else {

y += 1;

}

1. Why does the Math class not need to be imported?
   1. **The Math class is part of the java.lang package and is therefore already imported.**
2. Which of the following are correct literals for characters?

'1', '\u345dE', '\u3fFa', '\b', '\t'

* 1. **‘1’ yes is a correct character literal it stands for 1.**
  2. **‘\u345dE’ no this is not correct it has too many characters.**
  3. **‘\u3fFa’ yes this is a correct character literal**
  4. **‘\b’ yes is a correct literal it stands for backspace**
  5. **‘\t’ yes is a correct literal it stands for tab**

1. Write the code that generates a random lowercase letter.
2. What is wrong in the following code?

**import** java.util.Scanner;

**public** **class** Test {

**public** **static** **void** main(String[] args) {

Scanner input = **new** Scanner(System.in);

System.out.print("Enter an integer: ");

**int** value = input.nextInt();

System.out.println("The value is " + value);

System.out.print("Enter a line: ");

String line = input.nextLine();

System.out.println("The line is " + line);

}

}

1. input.nextline(); needs to be placed before the System.out.print(“Enter a line: “); because the \n must be removed before the user can input more characters.