1.Write program in Java to discuss different types of formatting options(at least 10).

2.Write program in Java to discuss date formatting in Java.

3.

1) Consider the following if…then logic:

   if(age > 65) socialSecurityStatus = "eligible";

   else socialSecurityStatus = "ineligible";

   Rewrite this (pseudo) code using the Java ternary operator.

2) Suppose a String s is initialized by

```
String s = "a friendly face";
```

   a. Compute the value of the expression

```
s.charAt(2);
```

   b. What is the value of

```
s.length()?
```

   c. What is the value of

```
s.substring(2,9)?

s.substring(4)?
```

3) Write a Java expression that computes each of the following:

   a. Given the radius `r` of a circle, compute the area of the circle, and store it in a variable `A`.

   b. Given the length `len` and width `wid` of a rectangle, compute the length of the diagonal of the rectangle, and store it in a variable `diag`.

4)
Write a program that asks the user to enter a String. The program then writes to console all substrings of this `String`. (By "substring", we mean any sequence of characters that occur consecutively and in the same order in the given `String`. Therefore, "erg" is a substring of "energy", but "gre" and "eng" are not. Note that the empty string "" is considered a substring of every string.)
Note: You will need to make sure that you do not output the same substring twice. For instance, if the user types in "abbab", you might accidentally output the String "ab" twice, since it occurs in two places in this String.
Here is typical output:

```
Type in a string: what
Substrings of length 0
[]
Substrings of length 1
[w]
[h]
[a]
[t]
Substrings of length 2
[wh]
[ha]
[at]
Substrings of length 3
[wha]
[hat]
Substrings of length 4
[what]
```

5. Create a class Prog5. Inside its main method, create float variables to store each of the following numbers: 1.27, 3.881, 9.6
Output to the console the following two values:
a. the sum of the floats as an integer, obtained by casting the sum to type int
b. the sum of the floats as an integer, obtained by rounding the sum to the nearest integer, using the Math.round function.

6. Write a program (called Prog6) that creates and outputs an SQL statement based on user input. The program prompts the user for the following pieces of information:
table name
number of column names
column name (as many occurrences as there are column names)
salary value
For this exercise, the table name will refer to an imaginary database table that stores customer information, including name, zip, salary, and other columns that you may invent. The SQL statement that your program will output will be of the form
SELECT <column names>
FROM <table name>
WHERE salary > <salary value>

For example, if the user types in these values:
table name = Customer
number of column names = 5
column name = firstname
column name = lastname
column name = salary
column name = state
column name = zip
salary value = 55000
then your program would produce the following output:
SELECT firstname,lastname,salary,state,zip
FROM Customer
WHERE salary > 55000.0
IMPORTANT: The output of your program is simply the sql query – just a String – printed to the console window. You will not run your query against a real database in this exercise. The exercise is simply to create an sql query (not to run it).

7. Write a program (called Prog5) that asks the user to input a String. The output is the characters of this String in reverse order. (For example, if the input string is "Hello", the output string would be "olleH".) (Do not use arrays and do not create a new String object.) (Definitely do for the midterm.)

8. Write a program (called Prog6) that accepts String arguments (stored in args) from the main method, removes all duplicates, and outputs these arguments (without duplicates) in a comma-separated format. For example, if the input into the main method is

["horse", "dog", "cat", "horse","dog"]

then the output would be

"horse","dog","cat"

Typical output:

Original list: [horse dog cat horse dog horse cat horse]

List without duplicates: [horse dog cat]

9. Write an application that determines if an input word is a palindrome. A palindrome is a string that reads the same forward and backward, for example, noon and madam. Ignore the case of the letter. (Definitely do for the midterm.)

10.) **Star Problems** : a) First do the algorithms on paper only, make sure that it works in your

mind! At least two ‘for’ loops are needed, one nested inside the other.

Only after it works in your mind get it to work on the computer!

Do Not use ‘printf’ for this.

Prompt the user for a number, for the length on the bottom of a picture.

For example, say they input 6. The picture would look like :

(Definitely do this first one for the midterm.)

```
*
**
* *
*  *
*   *
******
```

b) same as above except the picture looks like :

```
     *
    **
   * *
  *  *
 *   *
******
```

c) For this part the bottom must be an ODD number! If 7 was entered the picture would look like :

11.

Write an application that determines if an input sentence is a palindrome, for example, “A man, a plan, a canal, Panama!”

You ignore the punctuation marks, blanks, and the case (upper or lower) of the letters.

Test your program THOROUGHLY!