APCS-A 2018 Semester One Review Name_____

(Highlight answers for multiple choice and show code for FRQs--upload to Canvas as PDF)

1. **Given str1 and str2:**

```
String str1 = "Jobs, Steven Paul"
String str2 = "Steven Paul Jobs";
```

Which of the following will return "Paul"

a. `str1.substring(7);`
b. `str2.substring(str1.indexOf("Paul"),str1.indexOf("Jobs")-2);`
c. `str1.substring(str2.indexOf("Paul"),str2.indexOf("Jobs")-2);`
d. `str1.substring(str1.indexOf("n")+2);`
e. none of the above

2. **What is the binary equivalent to 321?**

a. 1010000010
b. 101000001
c. 101100001
d. 10100001
e. none of the above

3. **Given an array** `int[] nums = {1,2,3,4,5};` **and** `int sum = 0;`
Which of the following will set the value of sum equal to 5?

```
a. for(int i = 0; i < nums.length; i++)
        if(sum < nums[i]) sum+=nums[i];

b. for(int i = 0; i < nums.length; i++)
        if(sum > nums[i]) sum+=nums[i];

c. for(int i = 0; i < nums.length; i++)
        if(sum < nums[i]) sum=nums[i];

d. for(int i = 0; i < nums.length; i++)
        if(sum > nums[i]) sum=nums[i];

e. for(int i = 0; i < nums.length; i++)
        if(sum == nums[i]) sum = 5;
```

4. **What is the decimal equivalent to binary** `1111`**?**

a. 100
b. 150
c. 15
d. 11
e. none of the above

5. Which of the following correctly declares an ArrayList?

```
a. String[] ArrayList = new ArrayList<String>[12];
b. String<ArrayList> bob = new String<ArrayList>();
c. ArrayList<int> numberList = new ArrayList<int>();
d. ArrayList<Integer> numberList = new ArrayList<Integer>();
e. none of the above
```

6. What is the returned by the call go(3) ?

```
public static String go(int x){
   if (x <= 5)
      return "same";
   else if (x >= 3)
      return "notsame";
   return "done";
}
```

a. same **b. samenotsame** **c. done** **d. notsame** **e. notsamedone**

Fill in appropriate types for the following variables:

a. **String** b. **int** c. **double** d. **boolean**

7. __int_____ `strLen = 0;`

8. ____boolean_____ `stuActive = true;`

9. _____String_____ `numVal = "2";`

10. _____double_____ `launchAngle = 360/15.2;`

11. Fill in the blank with the appropriate reserved word:

```
public _______ max(int x, int y) {
      if (x > y) {
            return x;
      } else {
            return y;
      }
}
```

a. int
b. void
c. number
d. boolean
e. decimal

12. What will the following print?

```
for(int i = 2; i > 0 ; i--){
    for(int j = i; j <= 2; j++){
      System.out.print(i + j + ", ");
     }
  }
```

a. 2, 1,
b. 2, 3, 4,
c. 4, 3, 2,
d. 4, 2, 3,
e. none of the above

13. Which is the correct way to declare *and* initialize a variable?

a. String myString = pumpkin;
b. double = 2.1;
c. astring = "some string";
d. int myInt = 0;
e. double aDouble = "2.0";

14. What is the output?

```
int m = 0;
   int n = 7;
   while(m < 3) {
          n--;
          m++;
     }
System.out.print("" + m + n);
```

a. 24 b. 42 c. 52 d. 25 e. none of these

15. Which of the following will find a random integer between 2 and 8 inclusive. ("inclusive" means includning 2 and 8)

a. rNum = (int)Math.random()*10 - 2;
b. rNum = (int)(Math.random()*7) + 2;
c. rNum = (int)(Math.random()*6) + 2;
d. rNum = (int)Math.random()*6 - 2;
e. none of these;

16. What is printed as a result of the call: `numberCheck(3, 5)`?

```
public static void numberCheck(int minNum, int maxNum){
      int total = 0;
      int k;
      for (k=1; k <= maxNum; k++) {
           if (k >= minNum) {
              total = total + k;
           }
      }
```

```
      System.out.println("the total is:" + total);
}
```

a. the total is: 15
b. the total is: 12
c. the total is: 9
d. the total is: 345
e. none of the above

17. What string will str refer to after execution of the following?

```
      String s = "Strings are friends, not food";
      int x = s.indexOf("friends");
      int y = s.indexOf("food");
      String str = s.substring(0, x) + "g" + s.substring(y + 1);
```

a. "friendsgfood"
b. "Strings are food"
c. "friends are food"
d. "Strings are good"
e. none of the above

18. Given:

```
public void toTheMax(int num) {
      for (int i = 0; i < num; i++) {
            for (int j = 0; j < i; j++) {
                  System.out.print(i);
            }
            System.out.println();
      }
}
```

What would toTheMax(4) print?

a.	b.	c.	d.	e.
1	1	111	123	none of these
22	12	222		
333	123	333		

19. Which of the following ArrayList methods returns the number of elements currently stored in the ArrayList?

a. length
b. count
c. length();
d. size()
e. none of these

20. If a valid method call is: carryOn(5, "6"), then fill in the method signature.

```
public double carryOn( _______ firstNum, _______ secondNum)
```

a. int, String
b. double, double
c. String, String
d. boolean, boolean
e. none of the above

II Free Response:

FR1. Given the student class from project 3, assume a new instance variable has been added: **`private double GPA`**. Create a getter and a setter for the instance variable GPA.

```
public double getGPA(){
        return GPA;
        }
public void setGPA(double x){
        GPA = x;
        }
```

FR2. Given the Song class below, create the methods as described

```
public class Song {

     public Song (){/*code not shown */}

      /**  Given::the method signatuure below
      **   write the method definition such
      **   that every value in levels is <= maxLevel
      **   OR >= -maxLevel. If the value is > maxLevel, set the level
      **   equal to maxLevel.  If the level is less than -maxLevel, set
      **   the value to -maxLevel
      **   Precondition:: maxLevel > 0, levels != null
      **   return:: the number of values that have been changed */

public int adjustMaxMin(ArrayList<Integer> levels, int maxLevel){
       /* Complete this mehtod */
      int minLevel = maxLevel * -1;
              int timesChanged = 0;
              for(int i = 0; i < levels.size(); i++){
                  int thisLevel = levels.get(i);
                  if(thisLevel > maxLevel || thisLevel < minLevel){
                      timesChanged++;
                  }
                  while(thisLevel > maxLevel){
                 thisLevel--;
                  }
```

```
                while(thisLevel < minLevel){
               thisLevel++;
                }
          }
          return timesChanged;

     return

     }
```

FR3. Given the following array declaration and method call, write the method that will randomly choose and return one of the strings in randStrings. Use the method signature provided.

```
String[] randStrings = {    "yes",
                            "no",
                            "maybe",
                            "perhaps",
                            "It remains to be seen" }

String response = getRandomResponse(randStrings);
}

public String getRandomResponse(String[] str){
     int stringSize = str.length;
        int randomNumber = (int)(Math.random() * stringSize);
        String randomString = str[randomNumber];
        return randomString;
    }
```

FR4. Given the following array declaration and method call, write the method that will fill each element of the 2D arrray with a random number between 1 and 10 inclusive. Return the number of even values in the array. Write the method signature and definition for `loadNums()`.

```
 int[][] nums = new  int[10][10];

 int numEvens = loadNums(nums);

public int loadNums(int[][] nums){
      for(int r = 0; r < nums.length; r++){
            for(int c = 0; c< nums[r].length; c++){
                nums[r][c] = (int)(Math.random() * 10) + 1;
            }
        }
        int numEven = 0;
        for(int r = 0; r < nums.length; r++){
            for(int c = 0; c < nums[r].length; c++){
                int number = nums[r][c];
                if(number % 2 == 1){
                    numEven++;
                }
            }
        }
        return numEven;
}
```