
UNC Honor Pledge: I certify that no unauthorized assistance has been received or given in the completion of this work.

Signature ______________________________

Read this entire first page before beginning the exam.

You may NOT use any course materials in completing this exam.

You will have 60 minutes to complete this exam.

The exam consists of three sections: first, a section of multiple choice questions and short answer questions; second, a section requiring you to trace a short piece of code and write the output produced by the code; finally, a section requiring you to write code.

1) The second section provides three questions of which you may choose any TWO. If you answer all three questions, the two on which you receive the highest scores will be counted in your final score.

2) The third section provides three questions of different points. You may choose any TWO questions from them. If you answer all three questions, the two on which you receive the highest scores will be counted in your final score.

3) If your final score is greater than 100, the extra points will be counted as extra credit.

Pace yourself! If you find that you are stuck for a long time on a question that is not worth many points, move on to another question that you know how to do.

Please write your name on every page of the exam.

If something is unclear or if you need extra scratch paper, raise your hand. Write your name on any extra scratch paper and hand it in with your exam.

Write clearly! Illegible answers will not receive credit.
Part 1. (40 points) Answer ALL questions

1. (2 points) Which of the following are primitive types (circle all that apply)?
   a. double  b. String  c. char  d. Scanner

2. (3 points) Which of the following are legal variable names in Java (circle all)?
   total-cost    24hours    hi!    return
   return    numberOfDays    For    YES9

3. (5 points) What are the values of the following variables?
   a. 3.0 double var1 = 11 / 3;
   b. 3 int var2 = (int) (9.6 / 3.0);
   c. 4.5 double var3 = (double) 9 / 2;
   d. 1 int mod = 6 % 5;
   e. false boolean var4 = (4 > 3) && (6 <= 5)

4. (2 points) 4 bytes = 32 bits.

5. (2 points) Name the 2 types of memory. cache, register, tape and main memory, disk

6. (2 points) The two values of a bit are 1 and 0.

7. (3 points) Declare a variable to hold the amount of money in your bank account and initialize it to 245.25. Name your Java variable in a meaningful way so that any programmer would know what value it holds. Your variable name should be at least two words.

   double money = 245.25;
8. (2 points) Suppose you have the variable str of type String with data “Are we done yet?” Write out the data stored in str and place the index of each character below the string.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

9. (6 points) Give the return type and value of the following method calls on str (defined in question 8).
   a. str.length();
      int 16
   b. str.equals(“Not done yet!”);
      boolean false
   c. str.lastIndexOf(“e”);
      int 13
   d. str.charAt(5);
      char ‘e’
   e. str.substring(4, 11);
      String “we done”
   f. str.indexOf(“d”);
      int 7

10. (3 points) Find the error in the code below (Circle the error and explain briefly why it is wrong)

```java
String myString = “Hello World!”;
if (myString == “Hello there”){
    System.out.println(“Greetings”);
}
```

11. (3 points) Find the error in the code below (Circle the error and explain briefly why it is wrong)

```java
int x = 5;
if (x <= 10) {
    System.out.println(“x is 10”);
```
12. (3 points) Find the error in the code below (Circle the error and explain briefly why it is wrong)

```java
int x = 0;
while ( x < 15 )
{
    if (x % 5 == 0) {
        System.out.println("Hooray!");
        System.out.println(x + " is divisible by 5.");
    } else {
        System.out.println(x + " is not divisible by 5.");
    }
    x++;
}
```

13. (4 points) Find the error in the code below (Circle the error and explain briefly why it is wrong). You can assume that both methods are in the same class, and that the doSomething method has been called.

```java
public void squareIt(int num)
{
    int result = num * num;
    return result;
}

public void doSomething()
{
    int days = 5;
    int daysSquare = squareIt(days);
    System.out.println("Days^2: " + daysSquare);
}
```
Part 2. (20 points) Choose any TWO questions from questions 14-16.

14. (10 points) What is the value of temp at the end of the loop for the following input?

5
4 3 8 6 5 9 2 -1

```java
System.out.print("Please input an int: ");
int input = kb.nextInt();
int temp = 0;
while (input > 0)
{
    if(input > 3)
        temp++;
    System.out.print("Please input an int: ");
    input = kb.nextInt();
}
```

15. (10 points) What is the value of temp at the end of the loop for the following input?

20
9 4 2 0 8 1 7

```java
System.out.print("Please input an int: ");
int input = kb.nextInt();
int temp = 0;
for(int i=0; i < 6; i++){
    if(input % 2 == 1)
        temp += input;
    System.out.print("Please input an int: ");
    input = kb.nextInt();
}
```

16. (10 points) What is the output of the code below?

```java
for (int i = 1; i <= 3; i++) {
    for (int j = 0; j < 3 - i; j++)
        System.out.print(" ");
    for (int k = 1; k <= i; k++)
        System.out.print("*" треши);
    System.out.println();
}
```

* 
** 
***
Part 3. (40 points) Questions 17-19: choose any TWO questions. Pay close attention to the point values of these questions. You may attempt 35/40 points, 40/40 points, or 45/40 points depending on the questions you choose.

17. (15 points) Write a method that returns the absolute value of the integer passed in to the method. The absolute value of a number is its numerical value without regard to its sign. For example, the absolute value of -3 is 3. The absolute value of 3 is also 3. Fill in the return type for the method below, and then fill in the method body.

```java
public int absoluteValue(int num) {
    //return Math.abs(num);
    if(num < 0 )
        return (-1)*num;
    else
        return num;
}
```

18. (20 points) Assume that a String variable named str is given. Its value is a date but the format is ambiguous: it can be “mm-dd-yyyy” or “mm-dd-yy”. Write the code to remove the day information and generate a new String of format “mm/yy”. For example, if str were “10-12-2012” or “10-12-12”, then the resulting string would be “10/12”. Assume that str has already been declared for you and contains the string that you will manipulate. Do not worry about error checking. I will not take off points for simple syntax or off-by-one errors. The only String methods you will need are given in question 9.

```java
String month = str.substring(0,2);
String year = str.substring(str.length()-2,str.length());
String returnStr = month + “/” + year;
```
public boolean isPalindrome(String str)
{
    int length = str.length()/2;
    for( int i = 0; i < length; i++ )
    {
        if( str.charAt(i) != str.charAt(str.length()-i-1) )
            return false;
    }
    return true;
}