CP-2 Computer Programming II – Lab 2017-10-10

Due: Wed 23:50

Name: Student ID: Class:

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1. The following program prints Hello, world! using Java. Fill in the blanks to complete the program.

\_\_\_public\_\_\_ \_\_class\_\_\_ Test01 {

\_\_\_public\_\_\_ \_\_static\_\_\_\_ \_void\_\_\_ main(\_\_\_\_\_\_ [] args) {

\_\_System\_\_\_\_.\_\_out\_.println("Hello, world!");

}

}

1. The following programs print the value for Fibonacci number 10 using different types of Java methods. Fill in the blanks to complete the program.

(a)

\_\_\_public\_\_\_ \_\_\_class\_\_ Test02 {

\_\_\_\_public\_static\_ int fib(int n) {

if (n <= 2)

return 1;

else

return fib(n-1) + fib(n-2);

}

\_\_public\_\_\_\_ \_\_\_static\_\_\_ \_\_void\_\_ main(\_\_\_String\_\_\_ [] args) {

\_\_\_System\_\_\_.\_\_out\_.println(fib(10));

}

}

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(b)

\_\_\_public\_\_\_ \_\_class\_\_\_ Test03 {

int fib(int n) {

if (n <= 2)

return 1;

else

return fib(n-1) + fib(n-2);

}

public static void main(String [] args) {

\_\_Test03\_\_\_\_ obj = \_new\_\_ \_\_\_Test03\_\_\_();

System.out.println(obj.fib(10));

}

}

1. The following programs may or may not be successfully compiled and executed. If succesfully compiled, show the output of the program. If not, explain the cause of error.

(a)

public class Test04 {

public static void main(String [] args) {

int \_ = 3;

System.out.println("Value of \_ is" + \_);

}

}

能，答案是 Value of \_ is3

(b)

public class Test04 {

public static void main(String [] args) { int if = 3;

}

}

不能 if 是保留类型

4. Explain the data type of the follwing operations

boolean b = true;

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int i = 3, j = 4;

double d = 3, e = 4;

String s = "hello";

* 1. i/j

int

* 1. i/b

不能运行 报错 The operator / is undefined for the argument type(s) int, boolean

* 1. d/e

double

* 1. d/j

Double

Java 自动转换

* 1. s+d

String

字符串和数字直接相加，是把数字当成了字符串，这是JAVA的装箱机制，最终相当于字符串的连接

* 1. s-e

报错The operator - is undefined for the argument type(s) String, double

* 1. i+b

报错 The operator + is undefined for the argument type(s) int, boolean

1. What is the output of the following code?

int i = 1, j = 2, k = 3;

if (i > j)

if (j > k)

System.out.println("A");

else

System.out.println("B");

什么输出都没有，

1. The following program gets an integer from the keyboard and print the incremented value of it to the terminal. Fill in the blanks to complete the program.

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\_\_\_\_Import\_\_ \_\_java\_\_.\_Util\_\_\_.Scanner;

public class Test08 {

public static void main(String [] args) {

\_\_Scanner\_\_\_\_\_ input = new \_\_\_Scanner\_\_\_\_(\_\_\_System\_\_\_.in); int i = input.nextInt(); \_\_\_System\_\_\_.\_\_out\_.println(i + 1);

}

}

1. The following program shows the cancellation error. Write the following program and observe the output.

double x = 1000000000.0 + 0.0000000001; if (x == 1000000000.0) {

System.out.println("true");

}

else {

System.out.println("false");

}

输出是true; double 类型比较相等应该是比较误差的大小

1. (Demonstrate cancellation errors) A cancellation erro occurs when you are manipulating a very large number with a very small number. The large number may cancel out the smaller number. For example, the result of 100000000.0 + 0.000000001 is equal to 100000000.0. To avoid cancellation errors and obtain more accurate results, carefully select the order of com-putation. For example, in computing the following series, you will obtain more accurate results by computing from right to left rather than from left to right:

1 + 12 + 13 + · · · + n1

Write a program that compares the results of the summation of the preceding series, computing from left to writ and from right to left with n = 50000.

11.396983949278505

代码 **double** m,n;

**double** sum=0;

**for**(**int** i=1;i<50000;i++) {

**double** j=(**double**)i;

sum+=1/j;

}

System.***out***.println(sum);

9. You can approximate e using the following series:

e = 1 + 1!1 + 2!1 + · · · + n1!

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  |  |  |  |  |  |  |  |  |  |
| [ Hint: ] | 1 | |  | 1 | 1 | | |  |  |
|  | = |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  | i! | (i − 1)! i | | | |  |  |

1. Show approximations for n=200 and n=100000.

N=200 1.7182818284590455

N=100000 1.7182818284590455

代码

**double** s=0,j=1;

**for** (**int** i=1;i<=100000;i++ )

{

j=j\*i;

s=s+1/j;

System.***out***.println("J的值是："+j);

System.***out***.println("s的值是："+s);

System.***out***.println();

}

System.***out***.println("最终的值是："+s);

1. What is the difference between the two values?

精度不同把