

**Information and Computer Science Department**

**Spring Semester 152**

**ICS 102 – Introduction to Computing I**

**Midterm Exam Solution**

**Saturday, March 05, 2016**

**Duration: 120 minutes**

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| **Name:** |  |

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| **Instructor:** |  |

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| **Question #** | **Row Score** | **Weight** | **Score** |
| **1** |  | 9 |  |
| **2** |  | 7 |  |
| **3** |  | 7 |  |
| **4** |  | 7 |  |
| **Total** |  | 30 |  |

**Question # 1**

What is the output of the following code fragments?

| **Code Fragment** | **Output** |
| --- | --- |
| System.out.println(10 + 20 / 2); | 20 |
| System.out.println(89 / 10); | 8 |
| System.out.println(89 % 10); | 9 |
| System.out.println((double)89 / 10); | 8.9 |
| System.out.println((double)(89 / 10)); | 8.0 |
| String s = "ICS102";  String r = s.substring(3) + s.substring(0,3);  System.out.println(r); | 102ICS |
| String s = "ICS102";  System.out.println(s.indexOf("CI")); | -1 |
| int x = 10;  if (x > 1)  x = x + 10;  if (x > 15)  x = x + 5;  System.out.println(x); | 25 |
| int x = 10;  if (x > 1)  x = x + 10;  else if (x > 15)  x = x + 5;  System.out.println(x); | 20 |
| int s = 0;  for (int x = 1; x <= 100; x++)  s += 5;  System.out.println(s); | 500 |

**Question # 2**

Write a program that takes the x – y coordinates of a point in the Cartesian plane and prints a message telling either an axis on which the point lies or the quadrant in which it is found.

|  |  |
| --- | --- |
| Sample lines of output:  (-1.0, -2.5) is in quadrant III  (0.0, 4.8) is on the y-axis |  |

import java.util.Scanner;

public class MidtermQ2

{

public static void main(String[] args)

{

Scanner kb = new Scanner(System.in);

System.out.println("Enter x - y coordinates of a point:");

double x = kb.nextDouble();

double y = kb.nextDouble();

System.out.print("(" + x + "," + y + ") ");

if(x == 0)

if(y == 0)

System.out.println(" is origin");

else

System.out.println(" is on y-axis");

else if(y == 0)

System.out.println(" is on x-axis");

else if(x > 0)

if( y > 0)

System.out.println(" is in quadrant I");

else

System.out.println(" is in quadrant IV");

else

if( y > 0)

System.out.println(" is in quadrant II");

else

System.out.println(" is in quadrant III");

}

}**Question # 3**

Write a program that reads a string str and an int n, then outputs a string where the char at index n has been removed. Assume that n is a valid index (n is in the range 0..str.length()-1 inclusive).

("kfupm", 1) --> "kupm"

("kfupm", 0) --> "fupm"

("kfupm", 4) --> "kfup"

import java.util.Scanner;

public class MidtermQ3

{

public static void main(String[] args)

{

Scanner kb = new Scanner(System.in);

System.out.println("Enter string");

String str = kb.nextLine();

System.out.println("Enter an int n");

int n = kb.nextInt();

String newstr = str.substring(0, n) + str.substring(n+1);

System.out.println("str = " + str);

System.out.println("newstr = " + newstr);

}

}

**Question # 4 [8 points]**

The value for π can be determined by the series equation

Write a program to approximate the value of π using the formula given including terms up through 1/99.

public class MidtermQ4

{

public static void main(String[] args)

{

double sum = 0;

double sign = 1;

for(int x = 1; x <= 99; x+= 2)

{

sum += sign / x;

sign = -sign;

}

/\* for(int x = 1; x <= 99; x+= 4)

sum += 1.0 / x;

for(int x = 3; x <= 99; x+= 4)

sum -= 1.0 / x;

\*/ sum \*= 4;

System.out.println("pi = "+ sum);

}

}