

CSE 142 Sample Midterm Exam #3 Key

1. Expressions

<u>Expression</u>	<u>Value</u>
<code>1 + 2 * 3 - 4 * 5</code>	-13
<code>5 / 2 + 9.0 / 2.0 - 2 * 1.25</code>	4.0
<code>29 % 2 % 5 + 34 % 3</code>	2
<code>8 + 6 * -2 + 4 + "0" + (2 + 5)</code>	"007"
<code>31 / 2 / 10.0 + 10 / (5 / 2.0)</code>	5.5
<code>(1 != 2) != (2 != 3)</code>	false

2. Parameter Mystery

```
drew saw the felt
sue felt the saw
sue drew the b
b sue the a
drew felt the felt
```

3. While Loop Simulation

<u>Method Call</u>	<u>Output</u>
<code>mystery(42, 0);</code>	42
<code>mystery(6, 12);</code>	12 6 6
<code>mystery(18, 27);</code>	27 18 9 9
<code>mystery(24, 60);</code>	60 36 24 12 12
<code>mystery(50, 15);</code>	50 35 20 15 10 5 5

4. Assertions

	<code>x > 2</code>	<code>x < n</code>	<code>n % x == 0</code>
Point A	NEVER	SOMETIMES	SOMETIMES
Point B	SOMETIMES	ALWAYS	SOMETIMES
Point C	NEVER	SOMETIMES	SOMETIMES
Point D	ALWAYS	SOMETIMES	SOMETIMES
Point E	SOMETIMES	NEVER	SOMETIMES

5. Programming (five solutions shown)

```
public static boolean enoughTimeForLunch(int h1, int m1, int h2, int m2) {
    if (h1 > h2) {
        return false;
    } else if (h1 == h2) {
        return m2 - m1 >= 45;
    } else if (h1 == h2 - 1) {
        return 60 + m2 - m1 >= 45;
    } else {
        return true;
    }
}
```

```
public static boolean enoughTimeForLunch(int h1, int m1, int h2, int m2) {
    if (h2 > h1 + 1) {
        return true;
    } else if (h2 == h1 && m1 + 45 <= m2) {
        return true;
    } else if (h2 == h1 + 1 && m1 - 15 <= m2) {
        return true;
    } else {
        return false;
    }
}
```

```
public static boolean enoughTimeForLunch(int h1, int m1, int h2, int m2) {
    if (h1 > h2) {
        return false;
    } else if (h1 == h2) {           // same hour
        if (m1 + 45 <= m2) {       // must be >= 45 min apart
            return true;
        } else {
            return false;
        }
    } else if (h2 == h1 + 1) {     // h1 is just before h2
        if (m1 - 15 <= m2) {       // must be >= -15 min apart
            return true;
        } else {
            return false;
        }
    } else {                       // time 1 is > 1 hour before time 2
        return true;
    }
}
```

```
public static boolean enoughTimeForLunch(int h1, int m1, int h2, int m2) {
    if ((h1 == h2 && m1 + 45 <= m2) ||
        (h2 == h1 + 1 && m1 - 15 <= m2) || (h1 < h2 - 1)) {
        return true;
    } else {
        return false;
    }
}
```

```
public static boolean enoughTimeForLunch(int h1, int m1, int h2, int m2) {
    return 60 * h1 + m1 + 45 <= 60 * h2 + m2;
}
```

6. Programming (three solutions shown)

```
public static void printGrid(int rows, int cols) {
    for (int i = 1; i <= rows; i++) {
        System.out.print(i);
        for (int j = 1; j <= cols - 1; j++) {
            System.out.print(", " + (i + rows * j));
        }
        System.out.println();
    }
}
```

```
public static void printGrid(int rows, int cols) {
    for (int i = 1; i <= rows; i++) {
        for (int j = 0; j < cols - 1; j++) {
            System.out.print((i + rows * j) + ", ");
        }
        System.out.println(i + rows * (cols - 1));
    }
}
```

```
public static void printGrid(int rows, int cols) {
    int n = 1;
    int count1 = 1;
    int count2 = 1;
    while (count1 <= rows * cols) {
        if (count1 % cols == 0) {
            System.out.println(n);
            count2++;
            n = count2;
        } else {
            System.out.print(n + ", ");
            n = n + rows;
        }
        count1++;
    }
}
```

7. Programming (two solutions shown)

```
public static int countEvenDigits(int n) {
    int count = 0;
    while (n != 0) {
        int digit = n % 10;
        n = n / 10;
        if (digit % 2 == 0) {
            count++;
        }
    }
    return count;
}
```

```
public static int countEvenDigits(int n) {
    int count = 0;
    while (n > 0) {
        if (n % 2 == 0) {
            count++;
        }
        n = n / 10;
    }
    return count;
}
```