



Dep.: Computer Science  
Sections: 1, 2, 3  
Year: 1433-1434  
Date: 05/01/1434

Course: Computer Programming (CS107)  
Dr. Miled Tezeghdanti  
First Semester  
Allowed time: 1h30

## **Midterm Exam (7 pages, 4 Exercises)**

(Marks: 20 Points)

	الاسم
	الرقم الجامعي
	الشعبة
	التوقيع

- Open documents.
- Write in the spaces provided.
- Be neat.

	Mark	Out of
Exercise 1		6
Exercise 2		4
Exercise 3		6
Exercise 4		4
<b>Total</b>		<b>20</b>

**Exercise 1 (6 points)**

What is the output of the following codes?

1) (2 points)

```
#include <iostream>
using namespace std;

int main() {
    int x = 3;
    int y = 2;
    int z = 8;
    int t;
    t = x + y + 2 * z / 3;
    cout << "t = " << t << endl;
    return 0;
}
```

.....

2) (2 points)

```
#include <iostream>
using namespace std;

int main() {
    int x = 12;
    int y = 8;
    int i;
    if (x > y) {
        i = y;
    }
    else {
        i = x;
    }
    cout << "before while i = " << i << endl;
    while (i >= 1) {
        cout << "inside while i = " << i << endl;
        if (x % i == 0 && y % i == 0) {
            break;
        }
        i--;
    }
    cout << "after while i = " << i << endl;
    return 0;
}
```

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3) (2 points)

```
#include <iostream>
using namespace std;
```

```
int main() {
    int g = 86;

    switch (g/10) {
        case 10:
        case 9:
            cout << "A";
            break;
        case 8:
            cout << "B";
            break;
        case 7:
            cout << "C";
            break;
        case 6:
            cout << "D";
            break;
        default:
            cout << "F";
    }

    if (g >= 60 && (g % 10 >= 5 || g == 100 )) {
        cout << "+";
    }
    cout << endl;
    return 0;
}
```

.....



**Exercise 3 (6 points)**

Write a C++ program that determines the set of divisors of a given number **n**.

**Example 1:**

n = 12

Set of Divisors of 12 = {1, 2, 3, 4, 6, 12}

**Example 2:**

n = 16

Set of Divisors of 16 = {1, 2, 4, 8, 16}

**Example 3:**

n = 29

Set of Divisors of 29 = {1, 29}

**Example 4:**

n = 34

Set of Divisors of 34 = {1, 2, 17, 34}

// Exercise 3

#include <iostream>

using namespace std;

int main() {

.....

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}

#### **Exercise 4 (4 points)**

Write a C++ program that computes the sum of all the digits of the numbers smaller or equal to a given number **n**.

**Example 1:**

```
n = 13;
```

```
sum = 55
```

```
 //(1)+(2)+(3)+(4)+(5)+(6)+(7)+(8)+(9)+(1+0)+(1+1)+(1+2)+(1+3)= 55
```

**Example 2:**

```
n = 14;
```

```
sum = 66
```

```
 //(1)+(2)+(3)+(4)+(5)+(6)+(7)+(8)+(9)+(1+0)+(1+1)+(1+2)+(1+3)+(1+4) = 60
```

**Example 3:**

```
n = 436;
```

```
sum =
```

```
 //(1)+(2)+(3)+...+(4+3+2)+(4+3+3)+(4+3+4)+(4+3+5)+(4+3+6) = 4555
```

