



# Lab 02: Formatted I/O

CSE 4108

Structured Programming I Lab

JULY 2021



# Lab Tasks

## 1. It's a Date:

Write a program that accepts a date from the user in the format mm/dd/yyyy and then displays it in the form yyyymmdd.

Sample Run:


Enter a date (mm/dd/yyyy): 2/17/2021

You entered the data 20210217

## 2. Inventory Management System:

Mr. Sakamoto from Convenience Delivery Store (CDS) of Imperial University of Tokyo (IUT) is back. This time, he wants you to create a list of items in his shop. He will provide you item number, unit price and purchase date of the products available in CDS. He wants you to show the items in an organized manner. However, before finalizing the design he wants to see how the list will look like a single item.

You have to write a program that formats product information entered by the user. A session with the program should look like this:



Enter item number: 583

Enter unit price: 13.5

Enter purchase date (mm/dd/yyyy): 10/24/2019

Item	Unit	Purchase
Price	Date	583
\$ 13.50	10/24/2019	


The item number and date should be left justified; the unit price should be right justified.

Allow dollar amounts up to \$9999.99.

**Hint:** Use tabs to line up the columns

### 3. Code of ISBN:

Books are identified by an International Standard Book Number (ISBN). ISBNs assigned after January 1, 2007 contain 13 digits, arranged in five groups, such as **978-0-393-97950-3**. (Older ISBNs use 10 digits). The first group (the GS1 prefix) is currently either **978** or **979**. The group identifier specifies the language or country of origin (for example, **0** and **1** are used in English speaking countries). The *publisher code* identifies the



publisher. The item number is assigned by the publisher to identify a specific book. An ISBN ends with a check digit that's used to verify the accuracy of the preceding digits. Write a program that breaks down an ISBN entered by the user.

Sample Run:

Enter ISBN: 978-3-16-148410-0

GS1 prefix: 978

Group Identifier: 3

Publisher code: 16

Item number: 148410

Check digit: 0

The number of digits in each group may vary; you can't assume that groups have the lengths shown in this example. Test your program with actual ISBN values (usually found on the back cover of a book and on the copyright page).



#### 4. Phone Number Formats:

Write a program that prompts the user to enter a telephone number in the form **(ddd)ddd-dddd** and then displays the number in the form **ddd.ddd.dddd**.

Sample Run:

```
Enter phone number [(xxx) xxx-xxxx]: (404)817 -
6900
```

```
You entered 404.817.6900
```

#### 5. Numbers Square:

Write a program that asks the user to enter the numbers from 1 to 16 (in any order) and then displays the numbers in a 4 by 4 arrangement, followed by the sums of the rows, columns, and diagonals.

Sample Run:

```
Enter the numbers from 1 to 16 in any order:
```

```
16 3 2 13 5 10 11 8 9 6 7 12 4 15 14 1
```

```
16 3 2 13
```

```
5 10 11 8
```

```
9 6 7 12
```

```
4 15 14 1
```



```
Row sums: 34 34 34 34
```

```
Column sums: 34 34 34 34
```

**Diagonal sums: 34 34**

If the row, column, and diagonal sums are all the same (as they are in this example), the numbers are said to form a magic square. The magic square shown here appears in a 1514 engraving by artist and mathematician Albrecht Dürer. (Note that the middle numbers in the last row gives the date of the engraving).

## **6. Signed Fractions:**

Modify the `addfrac.c` program (shown in class) so that the user enters both fractions at the same time, separated by a plus sign.

Sample Run:

**Enter two fractions separated by a plus sign:**

**5/6+3/4**

**The sum is 38/24**

**Hint:** Check out the `addfrac` program from the program file shown in class

## **7. Is your horseshoe on the other hoof?:**

Login to Codeforces using the account you created in the previous lab. Solve the following problem:

<https://codeforces.com/problemset/problem/228/A>