# CSCI 101: Problem Solving with Computers

## Lab 9: Spreadsheet Basics

**Due Dates** **Sec A: 11/2/10 by 11:59 pm; Sec B, C: 11/3/10 by 11:59 pm**

**Email to:** csci101fall10lab9@gmail.com

**Important: please read through the entire lab because it contains useful information – it will save you time in the long run. AND remember you will be tested in concepts taken from both lecture and lab material. This lab may take more than the lab period – you are always expected to continue lab exercises beyond the class hours.**

### Goals

1. to familiarize yourself with spreadsheets
2. to recognize problems that a spreadsheet can be useful for solving
3. to use spreadsheets to effectively convey information, meaning, and context

### Overview

1. Open Excel (either Mac or Windows)
2. **Save it on you're the shared drive on your desktop as LastName_FirstName_Lab9 e.g. Hardy_Nazli_Lab9. This step is especially critical for this lab**
3. Follow this naming format for all future labs
4. Under no circumstances should there be any sharing of answers
5. **Be sure to save your work on your MyVille Briefcase before you log off** – and you will be able to access your files from anywhere. Remember that even if you save it on the desktop of the lab computer, your work may/ will be lost upon you logging off.

### Submission Guidelines

1. Once you have finished the lab(s), please attach your document(s) to the email address listed at the top of this page – copy and paste the email address so that you are assured of reaching the correct email address. There will be a new email address for each lab.
2. Please do not email labs to my email account.
3. The heading of your email should be LastName_FirstName_Lab#
4. If you have successfully submitted your lab, you should received the following autoreply:

   From: CSCI101 Fall [mailto:csci101fall10lab9@gmail.com]
   Sent: Date of Receipt
   To: you
   Subject: Receipt of Lab

   Dear Student,

   Your lab has been received.

   Thank you,
   Dr. Hardy

This lab will use the popular Microsoft Excel spreadsheet application to introduce spreadsheet concepts, but these concepts and procedures will be useful for using any spreadsheet application. At the end of this lab, you should be able to use a spreadsheet, and also be able to recognize problems that a spreadsheet can be useful for solving.

## Discussion and Procedure

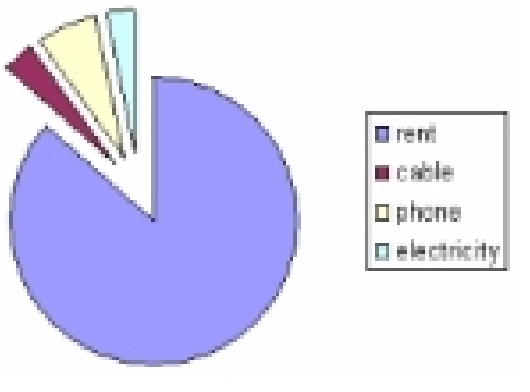
### Part 1. What are spreadsheet applications good for?

**Structuring data.** Spreadsheets are most commonly used to store and perform calculations on numeric data. Examples of data like this include a checkbook record, business transaction records, data from scientific experiments (e.g., daily rainfall), and results of a survey. The first advantage of spreadsheets is that data can be stored in a structured way, making it easy to retrieve and present the data in different ways. Imagine, for example, keeping track of your expenses in a notebook, where you might list your expenses like this:

> 17 Jan 2002, phone bill, $32.85
> electric bill, 25 Jan, $18.47
> rent, Feb 1, $640
> Feb 12, cable TV, $26
> Feb 18, phone, $52.02
> Feb 26, electric bill, $21.88
> (etc.)

Storing the same data in a spreadsheet has several advantages over handwritten a record, many of which come from the structure that spreadsheets put on data. A spreadsheet is organized like a table, with *cells* arranged in *columns* and *rows*. This overall structure keeps the format of the entries and makes the data more readable.

| | A | B | C |
|---|---|---|---|
| 1 | date | expense | amount |
| 2 | 01/17/02 | phone | $32.85 |
| 3 | 01/25/02 | electricity | $18.47 |
| 4 | 02/01/02 | rent | $640.00 |
| 5 | 02/12/02 | cable | $26.00 |
| 6 | 02/18/02 | phone | $52.02 |
| 7 | 02/26/02 | electricity | $21.88 |
| 8 | | | |




In addition to the overall structure provided by rows and columns of cells, you can specify the format (e.g., bold, italics…just like in a word processor) and data type (e.g., date, text, integer, real number, monetary amount) of a cell. In the example spreadsheet shown above, the cells in the first column are formatted as dates, so they are all displayed with the same month/day/year format. Similarly, the cells in the third column are formatted as currency amounts (in dollars), so they are all displayed with two decimal places and the dollar sign.

Structuring data this way has many advantages. You can use a spreadsheet to sort your data for different views of your data. You can also easily create visualizations of your data, in the form of bar, line, pie, and other graphs. We will see both of these features in this lab.

The main feature of a spreadsheet, however, is the ability to set up calculations on data that are automatically recomputed when you modify the data. In the example above, you might be interested in the total expenses. Later in this lab, you will see how to set up a cell whose value is automatically calculated from the values in other cells. Spreadsheets are often used to store business records and scientific data, because computations like averages, standard deviations, totals, etc. are commonly useful with such data.

## Part 2. Creating and Editing a Spreadsheet

In this part, you will create a spreadsheet for keeping a daily record of how many hours you spend doing various things (e.g., studying, watching television, talking on the phone). This might be useful for reexamining your time management strategy. Just as with programming, you should have a plan before starting work on your spreadsheet. Hands-on tasks will be indicated by the ▶symbol.

First, decide what data your spreadsheet will store. In this case, it seems sensible to store each day's data in a row. With one row per day, you should next decide what data you should have for each day, which determines what will be stored in the columns. Pick two activities you regularly engage in. With each row, you should store, in addition to the date, the number of hours spent that day on each of these activities, for a total of three columns.

▶ Start Excel. Microsoft Excel is often found on the Start menu under **Start \ Programs \ Microsoft Office \ Excel** if you are using Windows, or you will see it on your Desktop if you are using he Mac environment.

Most of the Excel window is occupied by your "worksheet," the grid of cells where you will record your data. The Microsoft Office 2007 suite of applications has a common "look and feel". Each application, including Excel, has a Ribbon bar at the top of the window, containing tabs and buttons. Below the Ribbon is an Excel-specific bar called the **Formula bar**, which we will use later. We will only use a few of the most essential features of Excel in this lab.

Note that each column can be identified by a letter, and each row by a number. This allows each cell in the grid to be identified by a cell reference, which is a letter-number combination such as A1 or B15. This will be useful later when defining formulas to perform automatic computations on your data.

▶ Enter column names in row 1 as shown below. Editing a cell is as easy as clicking the cell or using arrow keys to move to the cell you wish to edit, then typing the data value that you want in the cell. Enter column names in the first cells of Row 1 as shown below, using the names of the activities you chose in Step 1 above.

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Date | TV | Studying | |
| 2 | | | | |
| 3 | | | | |

▶ Enter a row of timing data. Begin by entering the date 15/1/2010 in Cell A2, in the "date" column.