SFU SIMON FRASER UNIVERSITY
ENGAGING THE WORLD

CMPT 120: Introduction to Computing Science and Programming 1

Algorithms, Flowcharts and Pseudocodes

python™

One-Stop Access To Course Information

- Course website: One-stop access to all course information.

http://www2.cs.sfu.ca/CourseCentral/120/liaqata/WebSite/index.html

- Course Outline
- Exam Schedule
- Python Info
- CourSys/Canvas link
- Learning Outcomes
- Office Hours
- Textbook links
- and more…
- Grading Scheme
- Lab/Tutorial Info
- Assignments

- Canvas: Discussions forum.

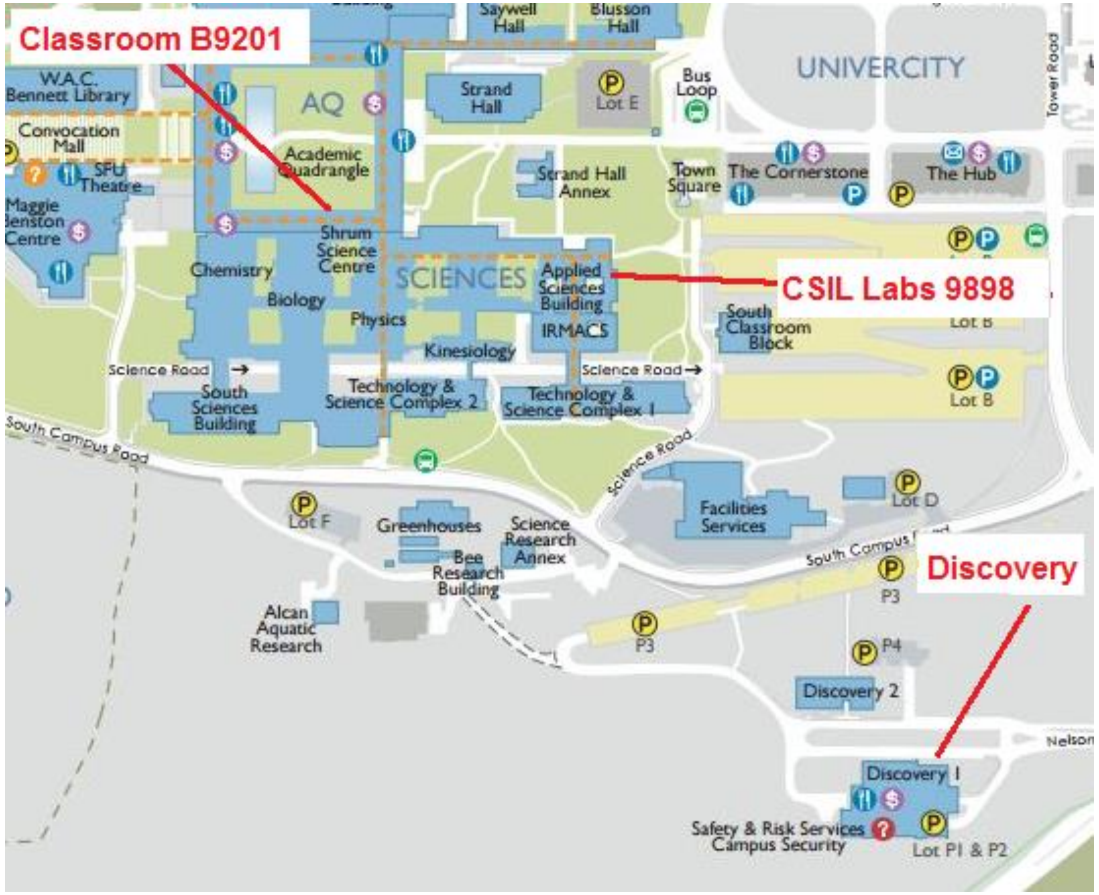
  https://canvas.sfu.ca/courses/39187

- CourSys: For assignments submission, and grades.

  www.coursys.sfu.ca

Some Reminders

- Get familiar with the course Website.
  - http://www2.cs.sfu.ca/CourseCentral/120/liaqata/WebSite/index.html
  - Minor updates may occur during first week.
- Get fob to access LABS **(start next week!)**
  - If you don't have it already, get a new fob from Discovery Park 1 .



Classroom B9201

CSIL Labs 9898

Discovery

Additional Resources / Online References

- There are several online references that are **as important as the texts**. (Links provided on the course web site.)
- These resources are **very important to your success** in this course. They aren't meant to be read from beginning to end like the readings in the textbook.
- You should **use them to get an overall picture of the topic** and as references as you do the assignments.

How to Learn in This Course?

A **Attend** Lectures & Labs

R **Read** / review Textbook/Slides/Notes

R **Reflect** and ask Questions

O **Organize** – your learning activities on weekly basis,

and finally…

W **Write** Code, Write Code, and Write Code.

Today’s Topics

1. Continue with Algorithms
2. Flowchart

https://etherpad.canvas.sfu.ca/p/i-8z1KelGBGco3wHfCPSJrPyv8VoMoIMe2laPnvFKp

Today’s Topics

1

Continue with Algorithms

Algorithm: Find the Smallest of Three Numbers

```
Step 1:  Start
Step 2:       Declare variables n1, n2, and n3.
Step 3:       Read variables n1, n2, and n3.
Step 4:       If n1 < n2 then:
Step 5:          If    n1 < n3 then print n1 is the smallest number.
Step 6:          else print n3 is the smallest number.
Step 7:       else
Step 5:          If n2 < n3 then print n2 is the smallest number.
Step 6:          else print n3 is the smallest number.
Step 9:  End
```

Let’s Write Another Algorithm: Even or Odd Number

Write an algorithm to print whether the user entered an even or an odd number.

```
Step 1:  Start
Step 2:
Step 3:
Step 4:


Step 4:         If
Step 5:         else
Step 6:  End
```

Today's Topics

2

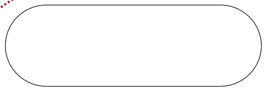
Flowcharts

Flowcharts

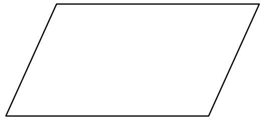
- Flowchart is a graphical representation of an algorithm.

□

Flowcharts: Geometric Shapes and Their Meanings

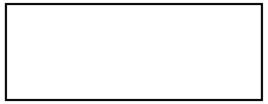


1. Start End



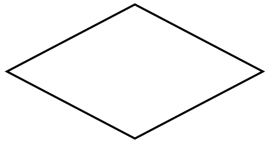
2. Input Output

□



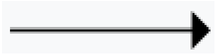
3. Process

□



4. Decision point

□



5. connect

Note: See textbook/online resources for more symbols.

Draw a Flowchart for the Adding Two Numbers Algorithm

```
Step 1: Start
Step 2:   Declare a variable N1.
Step 3:   Declare a variable N2.
Step 4:   Declare a variable S to store the sum.
Step 5:   Get the value of N1 from the user.
Step 6:   Get the value of N2 from the user.
Step 7:   Add N1 and N2 and assign the result to S.
Step 8:   Display the sum S.
Step 9:  End
```

Modify Algorithm: Add, If Sum < 50 Then Fail Else Pass

```
Step 1: Start
Step 2:   Declare a variable N1.
Step 3:   Declare a variable N2.
Step 4:   Declare a variable S to store the sum.
Step 5:   Get the value of N1 from the user.
Step 6:   Get the value of N2 from the user.
Step 7:   Add N1 and N2 and assign the result to S.
Step 8:   Display the sum S.
Step 9:

Step 10: End
```

Modify the Flowchart

Draw Flowchart: Find the Smaller of Two Numbers Algorithm

Write an algorithm to find the smaller of two numbers entered by a user.

```
Step 1:  Start
Step 2:      Declare a variable num1 to store the first number.
Step 3:      Declare a variable num2 to store the second number.
Step 4:      Get the value of num1 from the user.
Step 5:      Get the value of num2 from the user.
Step 6:      If num1 < num2 then print num1 is smaller.
Step 7:      If num2 < num1 then print num2 is smaller.
Step 8:      If num1 = num2 then print “Both the numbers are equal.”
Step 9:  End
```

Flowchart: Smaller of Two Numbers

```
Step 1:  Start
Step 2:      Declare variables n1, n2, and n3.
Step 3:      Read variables n1, n2, and n3.
Step 4:      If $n1 < n2$ then:
Step 5:          If      $n1 < n3$ then print n1 is the smallest number.
Step 6:          else print n3 is the smallest number.
Step 7:      else
Step 5:          If $n2 < n3$ then print n2 is the smallest number.
Step 6:          else print n3 is the smallest number.
Step 9:  End
```

Questions?