

Ideas for Today: You MUST Know what these mean:

These are the main ideas for today’s lab. Please make sure you can define them and use them.

- a. Function
- b. Passing values, returning a value
- c. Conditional Execution
- d. Comparison operators: <, >, <=, >=, ==, !=
- e. Boolean Expression
- f. Boolean operators: &&, ||, !
- g. False, True
- h. Constant

Three Parts to Computer Science

Vocab/Syntax (15%)	Designing/Building (90%)	Analyzing/Debugging (90%)
<p>Simple if:</p> <pre>if (bool_expression) { code... }</pre> <p>if and else:</p> <pre>if (bool_expression) { code... } else { code... }</pre> <p>Nested if:</p> <pre>if (bool_expression) { if (bool_expression) { code... } else { ... } }</pre> <p>Cascading if-else:</p> <pre>if (bool_expression) { code... } else if (bool_expression2) { code... } ... else { code... }</pre>	<p>Q: HOW DO I WRITE A PROGRAM?</p> <p>1. Write test data</p> <ul style="list-style-type: none"> - Helps you understand problem - Gives you a goal to meet <p>2. Start Small</p> <ul style="list-style-type: none"> - Plan the logic. - Trace your code with the test data. - Talk with other people discuss logic review syntax - Try the first condition: indent clearly write comments save - compile: fix syntax errors, - run: test simple case correct logic errors <p>3. Add More</p> <ul style="list-style-type: none"> - Add more conditions, then save, compile, fix syntax, - Test new conditions, - Discuss with others, - Compile often learn from errors before you make them a lot 	<p>Q: HOW DO I KNOW IT WORKS?</p> <ul style="list-style-type: none"> 1. Use test data 2. Use others’ test data <p>Can you test all possible values?</p> <ul style="list-style-type: none"> 3. Trace code by hand 4. Explain code to another <p>Which values are the tricky ones?</p> <p>Vocab: <i>boundary case</i></p>

Test Data:

	temp	day	hour	rain?	windMPH	price
Set 1						
Set 2						

```
//
// golf.cpp
//      version: original 2011-06-06 14:42
//      purpose: practice using user-defined functions and conditionals
//      modified by:
//      on:
//
#include <iostream>
#include <iomanip>
using namespace std;

// days of the week
const int SUN = 0, MON = 1, TUE = 2, WED = 3, THR = 4, FRI = 5, SAT = 6;

// constants for rules
const double BASE_PRICE = 9.0;
const int HIGH_TEMP_CUTOFF = 80;
const int LOW_TEMP_CUTOFF = 65;
const double PER_DEGREE_PENALTY = 0.10;
const int EVENING_START = 17;
const double WEEKDAY_DAY_PENALTY = 1.00;
const double RAIN_PENALTY = 2.00;
const int WIND_GRANULARITY = 15;
const double WIND_PENALTY = 1.50;

// function declaration
double price(int tempF, int day, int hour, bool is_raining, int wind_mph) ;

// main function here
int main()
{
    // define vars for input and a value used in the tests below
    int tempF, dayOweek, hour, rainP, windMPH;
    double value;

    // set the precision
    cout << setiosflags(ios::fixed) << setprecision(2);

    // Get data from user
    cout << "Temperature (fahrenheit)? ";
    cin >> tempF;

    cout << "Day of week (0=Sun, 1=Mon, ..., 6=Sat)? " ;
    cin >> dayOweek;

    cout << "Hour of day (0..23)? ";
    cin >> hour;

    cout << "Is it raining (0=no, 1=yes)? ";
    cin >> rainP;

    cout << "Wind speed (MPH)? ";
    cin >> windMPH;

    // compute the price based on these values
    value = price(tempF, dayOweek, hour, rainP, windMPH);

    cout << "Price: " << value << endl;
    return 0;
}

//
// function to compute the price based on various factors
//
double price(int temp_F, int day_of_week, int hour_of_day,
             bool is_raining, int wind_mph)
{
    double currentPrice = BASE_PRICE;

    //your code goes here
    //start by handling each case individually
    //ask for help if you get stuck

    return currentPrice;
}
```