# SE463: Software Testing and Quality Assurance

# ASSIGNMENT: Equivalence Class Testing (ECT)

**PROBLEM**: *Long-Distance Calls Calculator (LDC)*

A long-distance provider charges the following rates for telephone calls:

| Rate Category | Rate Per Minute |
|---|---|
| Daytime (6:00AM through 5:59PM) | $0.07 |
| Evening (6:00PM through 11:59PM) | $0.12 |
| Off-Peak (12:00AM through 5:59AM) | $0.05 |

**What to do:**
1) Create appropriate equivalence classes for the LDC application. Consider both valid and invalid input data. For instance, the minutes input must be numeric and greater than zero.
2) Write ECT (all flavors) test cases for this application. Save and organize all your test cases in an Excel workbook.
3) Use Visual Studio and C#.Net to implement the LDC application described above. The user will be able to select a rate category (from a set of radio buttons) and enter the number of minutes of the call. The application will then calculate and display the corresponding charges.
4) After your program is complete, you will run all your generated test cases. If you discover any defects, then document them by including them in your spreadsheet.
5) After all your test cases pass and your code is in a stable state, you will inject three different faults in your program. Make the faults to be very different in nature. Number each fault with a brief comment in the program explaining what the fault is.
6) Run all the test cases again for each case and make a note on the *effectiveness* (i.e. fault-finding power) of your test cases.

**What to Submit:** On the due date, you will upload zipped files to include the following:
1) The complete code for both the stable and faulty versions of your LCD applications
2) Your Excel workbook with all test cases and faults found in each case
3) A brief summary with your analysis of the effectiveness of your test cases

**Grading:** This assignment will be graded out of 100. The weights will be divided as follows:
- Implemented code: 40%
- Complete generation of test cases: 30%
- Analysis of effectiveness (i.e. fault-finding power): 20%
- Overall quality of your report: 10%