

Software Quality Assurance (WS 10/11)

*Problem Set 4
Due Wednesday, December 15th, 2010*

Problem 1: Functional Test: Equivalence Class Partitioning

A booking system processes incoming payment and payout of business customers and private customers according to transaction principles. For this processing, the system requires the account number as well as **the amount posted**. A **payout** is valid if it does not exceed the limit of the maximum amount of 5000€. A business account number begins with a B. A private account number begins with a P.

- a) Please determine the equivalence class partitions for the given functionalities.
- b) Please determine the test cases for all the equivalence classes.

Problem 1 (Variant 2)

A booking system processes incoming payment and payout of business customers and private customers according to transaction principles. For this processing, the system requires the account number as well as **the booking amount**. A **booking** is valid if it does not exceed the limit of the maximum amount of 5000€. A business account number begins with a B. A private account number begins with a P.

- a) Please determine the equivalence class partitions for the given functionalities.
- b) Please determine the test cases for all the equivalence classes.

Problem 2: Equivalence Class Partitioning with Boundary Value Analysis

A student data management program processes registration number, name, major, and mark (on average) of every single student. The student registration number is a five-digit integer that is not smaller than 10000. The program knows the majors Mathematics, Computer Science, Philosophy, and English. The program knows the marks 1.0, 2.0, 3.0, 4.0, and 5.0. A valid name has at least 3 and at most 20 characters.

- a) Please determine the equivalence class partitions for the given functionalities.
- b) Please determine the test cases for all the equivalence classes using the procedure of boundary value analysis.

Problem 3: State-based Test

Given is the specification of a digital watch software.

For adjustment of a digital watch, the following states are to be considered:

Normal time: State after inserting the battery

Adjust Hours: Hours can be adjusted

Adjust Minutes: Minutes can be adjusted

Adjust Seconds: Seconds can be adjusted

The following events could occur:

Start signal: Battery inserted

Button 1 pressed

Button 2 pressed

The two buttons must not be pressed simultaneously.

The following outputs could happen:

Hours flash: The operator is currently in the hour editing mode.

Minutes flash: The operator is currently in the minute editing mode.

Seconds flash: The operator is currently in the second editing mode.

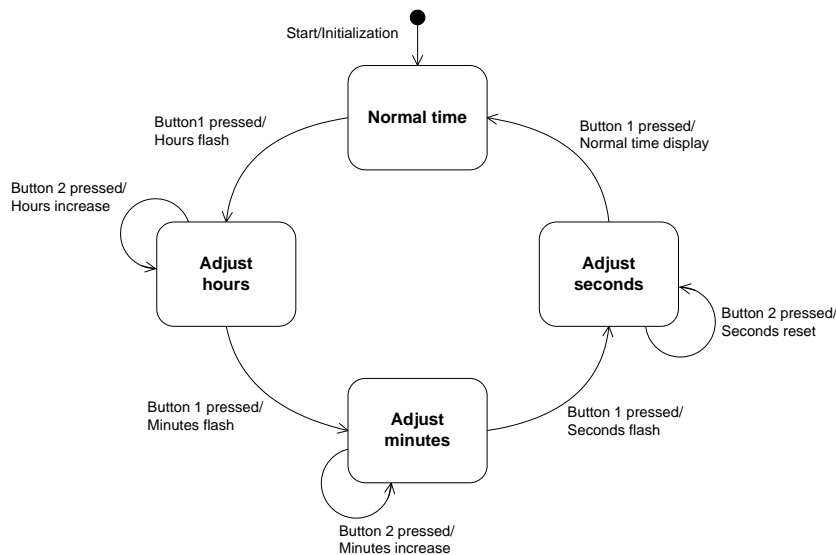
Hours increase: The hour display has increased by 1 hour.

Minutes increase: The minutes display increases by 1 minute.

Seconds reset: 00 displays as second display.

Initialization: Display of 00:00:00

State chart “Watch adjustment”



- Please determine the test data for the program execution that traverses every state.
Please select the simplest test cases.
- Please determine the test data for the program execution that traverses every transition.
Please select the simplest test cases.