## Week 5

### P 6.4 modus hall with errors

1. The error on Dut64\_ModusHall\_CondVar\_Error.py is STARVATION and it occurs because e.g.:
   * a Heathen is walking
   * the state now is HEATHENS RULE
   * a prude arrives
   * the state now is TRANS TO PRUDES
   * the prude is waiting until the last Heathen leaves
   * when the last Heathen leaves it changes the state to NEUTRAL
   * at that moment another Heathen can come in beside the Prude is already waiting to enter because the state is Neutral
   * now Prude will starve

Graphical user interface, text, application

Description automatically generated

1. Now if we directly go to the other’s active state (e.g., PRUDES\_RULE) when the last Heathen leaves, the problem is DEADLOCK, and it occurs because e.g.:
   * a Heathen is walking
   * the state now is HEATHENS RULE
   * a prude arrives
   * the state now is TRANS TO PRUDES
   * the prude is waiting until the last Heathen leaves
   * when the last Heathen leaves it changes the state to PRUDES RULE
   * at that moment another Heathen wants to come in, so he changes the state to TRANS TO HEATHENS
   * and now neither PRUDES nor HEATHENS can walk as the state will remain in TRANS TO HEATHENS

Graphical user interface, text, application

Description automatically generated

### Q 6.4 correct modus hall

1. Now if we do the transition in two phases, the first phase: is when the first Prude arrives while the Heathens are walking; the second phase: is when the last Heathen has left the path first phase: is when the first Prude arrives while the Heathens are walking; second phase: when the last Heathen has left the pathfirst one when a Prude arrives and the second one when the last Heathens leaves, the problem is STARVATION again, and it occurs because e.g.:
   * a Heathen is walking
   * the state now is HEATHENS RULE
   * a prude arrives
   * the state now is TRANS TO PRUDES 1
   * the prude is waiting until the last Heathen leaves
   * at that moment another Heathen wants to come in, but he doesn’t change the state because he can only change it if the state is PRUDES RULE, so he waits
   * when the last Heathen leaves, he changes the state to TRANS TO PRUDES 2
   * now Prude can go in
   * the Prude changes the state to PRUDES RULE
   * the PRUDE goes into the CS, but he is not aware that there is a Heathen waiting
   * and because of that, the Prudes can go forever entering and exiting and the Heathen will starve until the last Prude changes the state to NEUTRAL.
   * Graphical user interface, text, application

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