

# AINT503: Constraint Programming

## Practical Session 2

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# Goal of This Session

## Practical programming in the following areas

- Higher-order programming
- Parameterised constraint problems
- Using and defining distribution strategies
- Discussion of the Assignment

# Discussion of Homework: Generalised Grocery CSP

In groups, present your solutions to each other and discuss them.

## Generalised Grocery CSP: Solution

### Grocery example with Total as a variable

```
proc {Grocery Solution}
  Total A B C D
  MaxTotal = 1000
  AllVars = Total#A#B#C#D
in
  Solution = unit(total:Total vars:A#B#C#D)
  AllVars ::: 0#MaxTotal
  Total >: 0
  A+B+C+D =: Total
  A*B*C*D =: Total*100*100*100
  A =<: B
  B =<: C
  C =<: D
  %% search strategy
  {FD.distribute generic(value:splitMax) AllVars}
end
```

# Higher-Order Programming I

## Task (in pairs)

Read tutorial section on higher-order programming and try out the examples.

## Task (in pairs)

Using the higher-order function `Map`, apply the previously defined fun `Twice` to every member in a list of integers. Browse the collected resulting list.

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# Higher-Order Programming II

## Task (in pairs)

Define the higher-order function Map.

## Extra task (in pairs)

Define the higher-order function ForAll.

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## Extra Task

Read Oz tutorial on concurrency <http://www.mozart-oz.org/documentation/tutorial/node8.html>

# Summary

- Higher-order programming
- Parameterised constraint problems
- Using and defining distribution strategies

# Assignment

See file 0-Assignment.html