Situation Calculus
Assignment I
WS 2017/2018

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Organizational Issues

• Dates
  – 05.10.2017 8:45-11:00 (HS i12) lecture and first assignment
  – 12.10.2017 8:45-11:00 (HS i12) lecture and programming assignment
  – 11.10.2017 18:00-18:45 (HS i11) practice
  – 18.10.2017 18:00-18:45 (HS i11) practice and solution for first assignment
  – 16.10.2017 12:00 (office IST) submission first assignment
  – 09.11.2017 23:59 (group SVN) submission programming assignment
Assignment

• consider the **domain** of a packet delivery robot from assignment 1
• **implement** your basic action theory as **logic program** using SWI Prolog
Task 1 – Implement the BAT (25 points)

• **reuse** your domain model from assignment 1
• implement your basic action theory as **logic program**
• **hints**
  • model the **inductive** definition of the **situations**
  • model when a situation is **executable** to limit correct situations
  • instead of using fluent directly use an **auxiliary predicate**
     \[ \text{hold}(F(x), s) \] meaning that fluent \( F(x) \) holds in situation \( s \)
Task 2 – Asking Queries (10 points)

• use the initial database of assignment 1
• define the following queries to your program
  • is the package 1 at position D if the robot moved to position B, loaded it, moved to position D, and unloaded it
  • is there a situation where the packet 1 is at position A
  • is there a situation where the packet 1 is at position H
• answer the queries using your logic program
Task 3 – Allow Programming (15 points)

• extend your logic program in order to allow Golog programming
• allow at least
  • sequence, nondeterministic choice, test, while, pick
• write and execute a program that handles all three transport requests of assignment 1
• hints
  • use macro expansion to define the semantics of the Golog program
  • model the Golog program statements as recursive terms
Submission

• submission per course SVN
  • folder `<Repository-URL>/steinbauer`
• deadline: 09.11.2017, 23:59 – firm!
• group work of up to 5 students
• submit one Prolog file with the logical program
  • named `delivery.pl`
  • needs to be executable in SWI Prolog
• submit a single text file
  • named `queries.txt`
  • contains all requested queries in proper Prolog format and a brief description of them
## Credits

<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
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<tbody>
<tr>
<td>axiomatization of the domain</td>
<td>25</td>
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<tr>
<td>regression</td>
<td>25</td>
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<tr>
<td>programming assignment</td>
<td>50</td>
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<tr>
<td><strong>Sum</strong></td>
<td><strong>100</strong></td>
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Questions ?