# Survey 8

* Required

1. **Please give your name** *

2. **Please give your CUHK student ID** *

3. **How much of Assignment 7 have you completed?** *
   *Mark only one oval.*
   - ◯ What? There is an assignment!?
   - ◯ Seen it.
   - ◯ Thought about it.
   - ◯ Tried it.
   - ◯ Finished it!!

4. **How many Course 2 Modules 4 & 5 lectures have you watched?** *
   *Mark only one oval.*
   - ◯ None
   - ◯ 1
   - ◯ 2-3
   - ◯ All

5. **What kind(s) of constraints do we have in basic packing problems? You can tick more than one.** *
   *Check all that apply.*
   - ☐ Alldifferent constraints
   - ☐ Counting constraints
   - ☐ Cumulative constraints
   - ☐ Non-overlap constraints
   - ☐ Precedence constraints

6. **How can we enforce in our model that no two rectangles can overlap each other in space? You can tick more than one.** *
   *Check all that apply.*
   - ☐ Inequalities
   - ☐ Disequalities
   - ☐ Disjunctive globals
   - ☐ Diffn globals
   - ☐ Cumulative globals

7. **The cumulative constraint is very similar/closely related to the diffn constraint. Each task can be thought of a rectangle with duration as length and resource requirement as height. Cumulative amounts to "packing" these rectangles into a big rectangle defined by maximum resource and time available. Given the same set of rectangles. A diffn constraint correspond to two cumulative constraints (one in x- and one in y-direction). What is the relationship between the cumulative constraints and diffn?** *

*Mark only one oval.*

- ◯ Cumulatives are satisfied if and only if diffn is satisfied
- ◯ If cumulatives are satisfied, then diffn is satisfied
- ◯ If cumulatives are satisfied, then diffn may be satisfied
- ◯ If diffn is satisfied, then cumulatives are satisfied
- ◯ If diffn is satisfied, then cumulatives may be satisfied

8. **How can we model a rectilinear shape in a packing problem?** *

*Mark only one oval.*

- ◯ A collection of squares with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of rectangles with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of collections of squares with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of collections of rectangles with specific orientations and relative positions to the "origin" of the shape
- ◯ NONE of the above

9. **How can we model a rotatable rectilinear shape in a packing problem?** *

*Mark only one oval.*

- ◯ A collection of squares with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of rectangles with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of collections of squares with specific orientations and relative positions to the "origin" of the shape
- ◯ A collection of collections of rectangles with specific orientations and relative positions to the "origin" of the shape
- ◯ NONE of the above

10. **What is a symmetry?** *

*Mark only one oval.*

- ◯ Mapping assignments in a solution to another set of assignments results in a solution
- ◯ Mapping variables in a solution to other variables results in a solution
- ◯ Mapping values in a solution to other values results in a solution
- ◯ Mapping constraints in the model to other constraints still produces a solution
- ◯ Mapping variables in the model still produces a solution

11. **What is a variable symmetry?** *

*Mark only one oval.*

- Mapping assignments in a solution to another set of assignments results in a solution
- Mapping variables in a solution to other variables results in a solution
- Mapping values in a solution to other values results in a solution
- Mapping constraints in the model to other constraints still produces a solution
- Mapping variables in the model still produces a solution

12. **What is a value symmetry?** *

*Mark only one oval.*

- Mapping assignments in a solution to another set of assignments results in a solution
- Mapping variables in a solution to other variables results in a solution
- Mapping values in a solution to other values results in a solution
- Mapping constraints in the model to other constraints still produces a solution
- Mapping variables in the model still produces a solution

13. **How many row and column symmetries are there in an n x m matrix model?** *

*Mark only one oval.*

- n + m
- n + m - 1
- n + m - 2
- nm
- (n-1)(n-1)
- n!m!
- (n-1)!(m-1)!

14. **How many symmetry breaking constraint does the LexLeader method add for an n x m matrix model?** *

*Mark only one oval.*

- n + m
- n + m - 1
- n + m - 2
- nm
- (n-1)(n-1)
- n!m!
- (n-1)!(m-1)!

15. **How many symmetry breaking constraint does the Double Lex method add for an n x m matrix model?** *

*Mark only one oval.*

- n + m
- n + m - 1
- n + m - 2
- nm
- (n-1)(n-1)
- n!m!
- (n-1)!(m-1)!

16. **How can we break value symmetries in a permutation problem? You can tick more than one.** *
*Check all that apply.*

- [ ] Use <
- [ ] Use lex_lesseq
- [ ] Use LexLeader
- [ ] Use value_precede_chain
- [ ] ALL of the above

17. **Given two feasible solutions, s1 and s2, of an optimization problem. Which of the following statement is true? You can tick more than one.**
*Check all that apply.*

- [ ] A feasible solution is an optimal solution
- [ ] An optimal solution is a feasible solution
- [ ] If s1 dominates s2, then s1 is symmetric to s2 and s2 is symmetric to s1
- [ ] If s1 is symmetric to s2, then s1 dominates s2 or s2 dominates s1
- [ ] NONE of the above

18. **Have you attempted Workshop 8 yet?** *
*Mark only one oval.*

- ◯ No
- ◯ Thought about it
- ◯ Completed it

19. **How much of Assignment 8 have you completed?** *
*Mark only one oval.*

- ◯ What? There is another ASSIGNMENT!?
- ◯ Seen it.
- ◯ Thought about it.
- ◯ Tried it.
- ◯ Finished it!!