Initial states: 1) A table containing the time available between 9:00 and 18:00, Monday to Friday.

	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Monday										/
Tuesday										/
Wednesday										/
Thursday										/
Friday										/

2)A table containing *m* lecture theatres which can be booked. Time slot 45h available per week for each theatre.

	Lecture 1	**Lecture2**	**….**	**Lecture2n**
Theatre1	Time slot 1h available	……	……	……
Theatre2	Time slot 1h available	……	……	……
…….	……	……	……	……
Theatre m	Time slot 1h available	……	……	……

Goal states:1) One lecture in one theatre for one hour.

2)Each theatre has one lecture allocated to it in a time period.

3)We would like to reduce the number of days that students need to come to the University

We indicated Each module has two lectures, and each lecture requires a 1 hour time slot . For example, for n=2, then m=4,we would have the following goal states:

	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:0	18:00
Monday	Module 1-1 Theatre1	Module 1-2 Theatre2	Module 2-1 Theatre3	Module 2-2 Theatre4						/
Tuesday										/
Wednesday										/
Thursday										/
Friday										/

or

	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:0	18:00
Monday	Module 1-1 Theatre1	Module 1-2 Theatre1	Module 2-1 Theatre1	Module 2-2 Theatre1						/
Tuesday										/
Wednesday										/
Thursday										/
Friday										/

Possible actions and their effect on states:

The actions have the following format:

Allocate (lecture i, time j, theatre k) ,where 2<=i<=2n, 9:00<=j<=18:00(workdays) and1<=k<=m. This action modifies the sate corresponding to a given allocation table by placing a lecture and a theatre together in the position (i,k) of the allocation time j into the table. i.e., by allocating numbers of lecture i to theatre j at time k.This action can only be applied to a given state if the state does not have a (I,k) in any j ,and does not have a time slot.

For example, consider that our current state is the following, for n=2:

	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:0	18:00
Monday	Module 1-1 Theatre1	Module 1-2 Theatre1								/
Tuesday										/
Wednesday										/
Thursday										/
Friday										/

The only action that can be applied to this state is Allocate (lecture1,theatre1) ,

which would lead to the following states:

	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:0	18:00
Monday	Module 1-1 Theatre1	Module 1-2 Theatre1	Module 2-1 Theatre1	Module 2-2 Theatre1						/
Tuesday										/
Wednesday										/
Thursday										/
Friday										/

	Module 1-1	**Module 1-2**	**Module 2-1**	**Module 2-2**
9:00-10:00				
10:00-11:00				
...				
...				
17:00-18:00				

The action Allocate(Module 1-2,Theatre1) cannot be applied at 9am-10am on Monday because the room is already occupied.

The action Allocate(Module 1-1,Theatre1) cannot be applied at 9am-10am on Tuesday because lecture1 has been given and a two-day-lecture is a time-wasting schedule than all lectures in one day.

Other positions in column Module 1-1 in table2 cannot be selected, because it has been allocated to Monday from 9am to 10am.

Cost function: each action Allocate(lecture i ,theatre k) has a cost of one hour in time j, which corresponds to the time of which lecture i is going to take. The cost function is the sum of the costs of all actions that constitute a solution.