

CS4211 PROJECT - AY 1516

MODELING AND VERIFYING SINGAPORE EXPO USING PAT

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Overview

1. Problem Description
2. Important & Interesting Points
3. Scope
4. Question & Answer

1. Problem Description



Singapore Expo (Source: singaporeexpo.com.sg)

1. Problem Description

- **Expo - the largest exhibition space in the country - consists of 10 halls with a more than 100000 square metres area, with thousands of shops and activities.**
- **Thus, there is a requirement to model and verify events took place inside Expo, making sure that everything run smoothly and intelligently!**

2. Important & Interesting Points

Expo organizer need efficient solution to model and verify:

- **Resource**
- **Shops**
- **Customers and visitors**
- **Safety and security constraints.**
- **Concurrent events**

2. Important & Interesting Points

- **Many important and interesting constraints need to be resolved and regulated:**
 - **Events:**
 - Some events can be shown in typical place and time.
 - **Selfie-stick introduction event can be only shown near mobile phone shops**
 - **Buffet cannot be served after 9 PM**
 - Scheduling between events
 - Deadlock

1. Important & Interesting Points

- **Customers:**
 - Leverage customers by age.
 - **Children are not allowed to go to 16+ game display area**
 - **Old people can not enter to some areas due to safe reason**
 - Constraint about number of customer for each event.
 - **Press conference room is allow the number of customer less than one third seat number**
 - Restriction place.
 - **Only VIP customer can go to VIP area.**

2. Important & Interesting Points

- Shops
 - Shops pay extra fee can extend exhibition time
 - Shops pay more fee can rent bigger area.
 - Shops sell similar products should be in the same hall to minimize the travel time of customer.
 - Some shops are not opened from a specific time for safe reason.

2. Important & Interesting Points

Our goal:

1. **Addressing the list of main events in Singapore EXPO**
2. **Using PAT to modeling the events and verify the events**
3. **Learn how to use PAT efficiently to solve real world problem**

3. Scope

In scope: What we intend to verify?

- Customer
 - Typical product
 - Budget
 - Place
 - Safe level
 - Area
 - ...

3. Scope

In scope: What we intend to verify?

- Shops
 - Age
 - Gender
 - Budget
 - Type (VIP/ Regular/ Non-Regular)
 - ...

3. Scope

In scope: What we intend to verify?

- Resource (Rooms, Halls, Stages...)
 - **Number**
 - **Capacity**
 - **Type (VIP/ Regular/ Non-Regular)**
 - **...**

3. Scope

In scope: What we intend to verify?

- Resource (Speaker, Light...)
 - **Number**
 - **Price**
 - **Type (VIP/ Regular/ Non-Regular)**
 - **...**

3. Scope

In scope: What we intend to verify?

- Event
 - Beginning time
 - End time
 - Venue
 - Restriction
 - Noise level
 - ...

3. Scope

In scope: What we intend to verify?

- **Parallel Process**
 - **Parallel exhibition event**
- **Sequential Process**
 - **Behavior of Customer (visit -> buy > visit ...)**
 - **Behavior of Shops**
- **Deadlock**
 - **Sharing rooms, facilities**

3. Scope

Out scope:

- **Problem linked with natural disaster or terrorism**
- **Delay or cancel of Expo due to organizer decision**
- **Interest of customers**
- **Place outside halls (exhibition place)**
- **...**

4. Question & Answer

