

User Manual

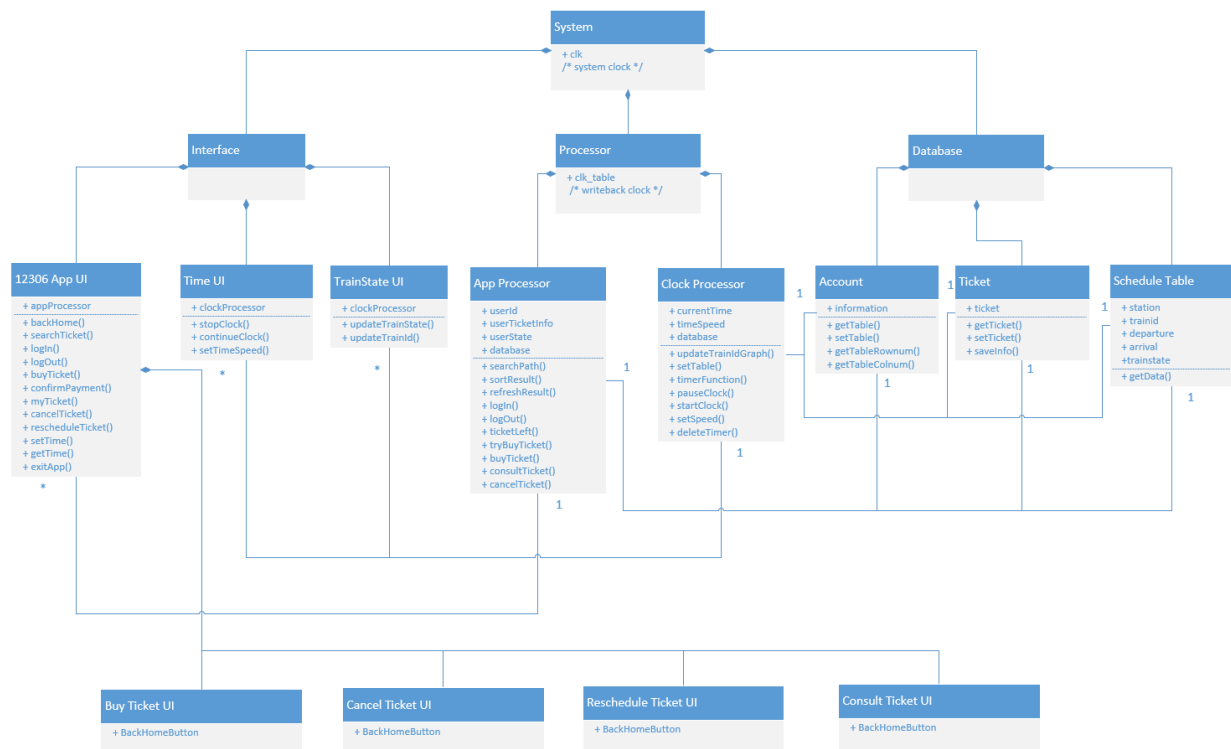
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System Architecture



Main Manual

2.1 Basic

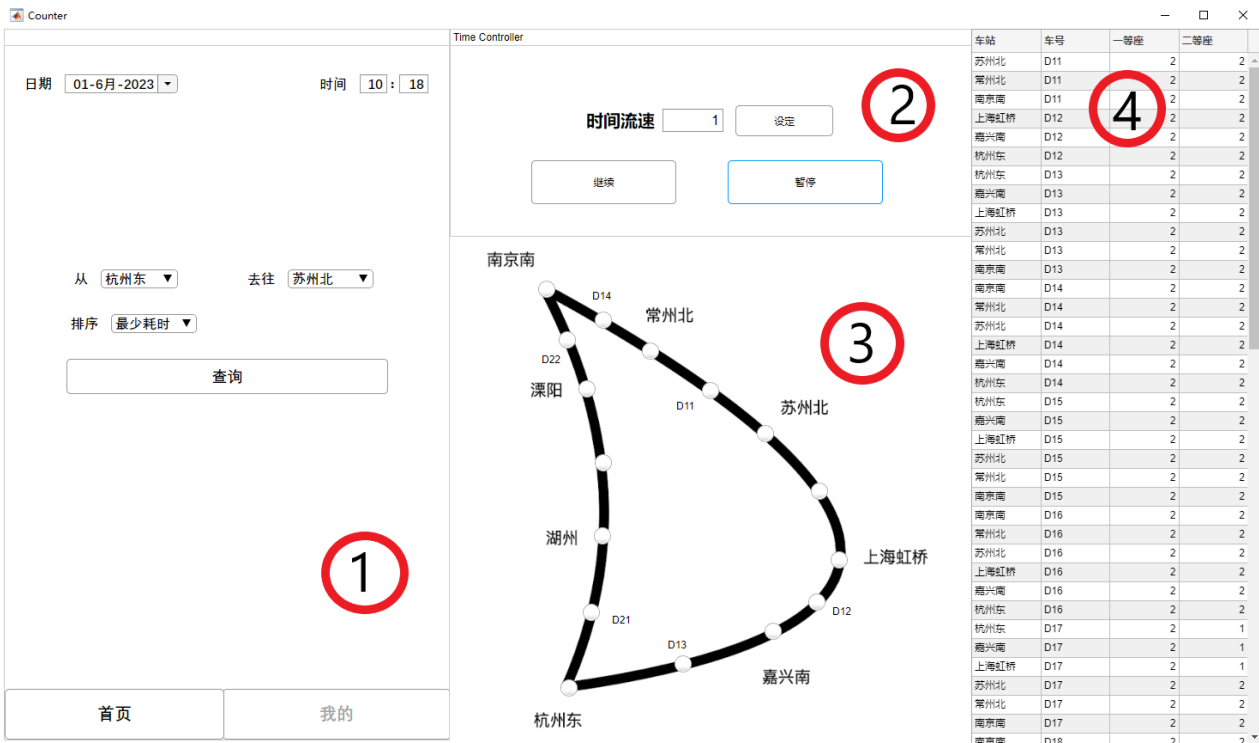
IMPORTANT!

Please run test first before you run main.m or multi_main.m! And intergration test and functional test may not all pass due to limit of test computer performance. For reference, a possible computer CPU and RAM combination is :

- CPU: AMD Ryzen 7 5800x @ 4.3GHz-4.9Ghz

- RAM: 32GB DDR4 3200 mhz

In development folder, open `main.m` and run it. The system will begin to run. If you want to use concurrency version and try grasp ticket competitively, you should run `multi_main.m` instead. At beginning, there will be a UI show up as picture below.



There are 4 section in the UI. The **1** section is the 12306 main UI. The **2** section is time controller. The **3** section is train location monitor and **4** monitor is train seat left monitor. **2**, **3**, **4** are all backend UI.

2.2 Main Panel

日期

04-6月-2023

▼

时间

02:20

从

杭州东

▼

去往

苏州北

▼

排序

最少耗时

▼

查询

首页

我的

Like the real world 12306, the front page of the app is inquiry.

- User can see the date on the upper left corner. But choosing different date can't pose effect on ticket. The time in one day is based on the time on upper right corner (i.e. if the time on upper right stays in one day, then the system will regard the operations take place in one day).
- User can click 从 to choose departure station, 去往 to choose arrival station and 排序 to choose the way to show inquiry result.

- Finally, press the 查询 button to search for available ticket for the time now and information user choose.
- User can click 我的 to turn to user information and log in panel. Notice that user doesn't need to login to search available ticket, but when using other function like buy ticket, cancel ticket and etc., login is required and user will receive a error msgbox if not logged in.

A rough operating procedure is as below:

- [optional] Adjust time.
- Choose departure station.
- Choose arrival station.
- Choose sorting way. [default = less time]
- Click 查询 button.

2.3 Log In

用户 114514

登陆

首页

我的

User can type in a number in `[1, +inf]` in the editfield and press `登陆` to login. In this panel, User can also return to front page by pushing `首页` with or without logging in.

2.4 Mine Panel After Log In



After log in, you can see your user id on the upper left corner and a little 已登录 . Also, user can push 登出 button to log out. On the middle of the panel, you can see 本人车票 . User can push 本人车票 to see his ticket and if there is no ticket, a panel below will jump out to notice user.



2.5 Search Result

<返回

杭州东

始 11:33

D15

一等座: 2

需转乘: 无

总耗时: 01H27M

价格: 3

二等座: 2

苏州北

终 13:00

购买

杭州东

始 13:03

D17

一等座: 2

需转乘: 无

总耗时: 01H27M

价格: 3

二等座: 1

苏州北

终 14:30

购买

杭州东

始 11:33

D23

一等座: 2

需转乘: 南京南

总耗时: 02H27M

价格: 5

二等座: 2

苏州北

终 14:00

D18

购买

杭州东

始 11:03

G21

一等座: 2

需转乘: 南京南

总耗时: 02H57M

价格: 6

二等座: 2

苏州北

终 14:00

D18

购买

In the search result, you can see a lot of informations about the ticket on these panels. User can push 返回 on the upper left corner to return to main page and push 购买 to buy ticket user wants, 12306 will lead user to the corresponding payment.

Notice that if the last or third panel gives a result of **0 or NULL** is **NOT A BUG**. It indicates there are search paths less than 4. Also, only showing 4 results doesn't mean there are only 4 possible paths. User can see different paths by changing way of sorting in main page. (i.e. We will sort all search results and only show the top 4 result.)

2.6 Pay

pay

购买车票

价格:¥ 3

始发站: 杭州东

发车时间: 11:33

到达站: 苏州北

到达时间: 13:00

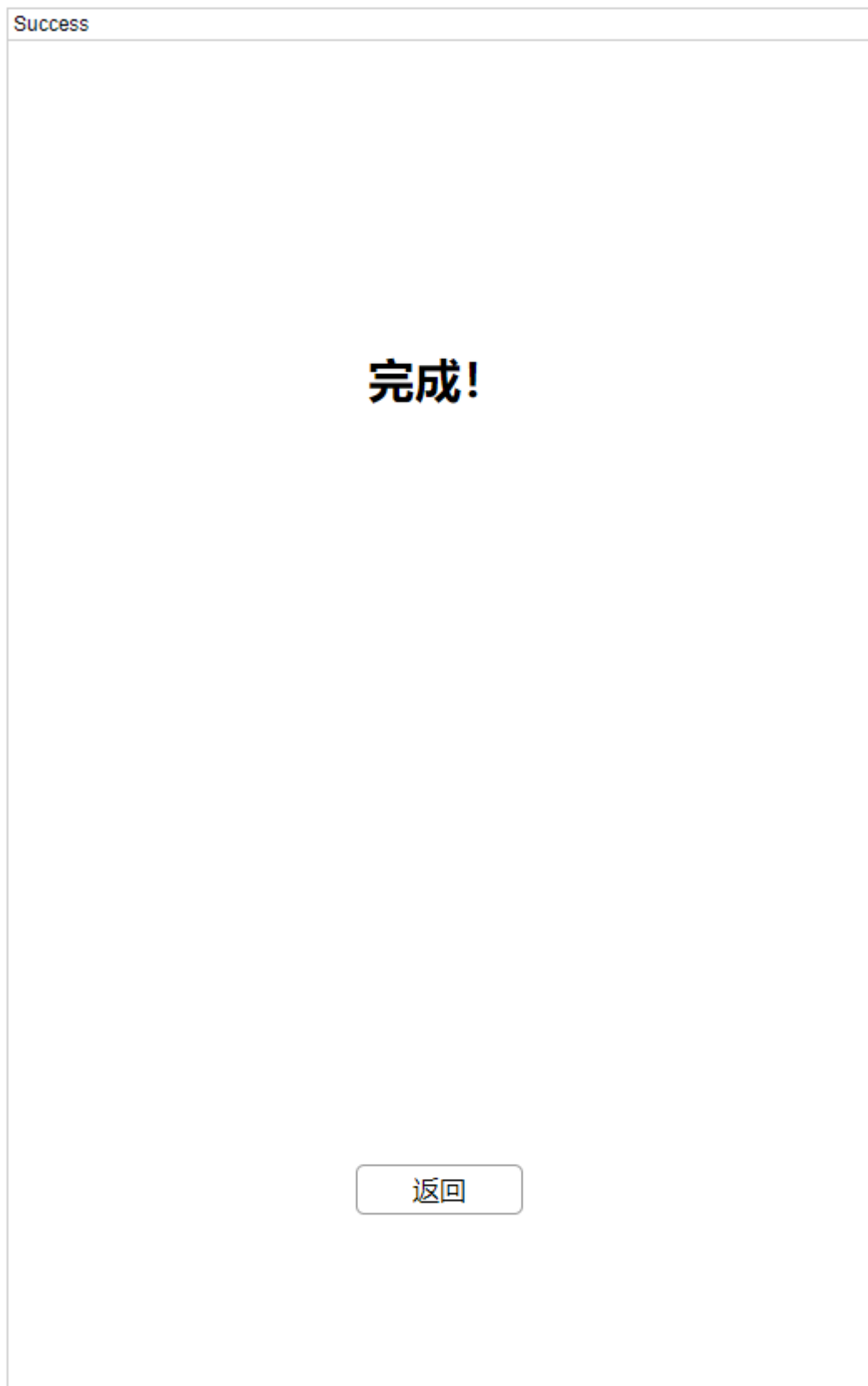
是否换乘: 无

座位类型 二等座 ▼

返回首页确定

After choosing the ticket user wants, a pay panel above will appear. User can confirm information about the ticket and choose the seat class he want.

- Pull down the dropdown to choose seat class and press 确定 to buy ticket.
- If user don't want this ticket, he/she can push 返回首页 to return to main page.
- After click 确定 you will see a success page below.



Notice that if user already have a ticket, he/she cannot buy another ticket. At this time if he/she tries to buy a ticket, a error msgbox will jump out to prevent his operation.

2.7 My Ticket

ticket

用户 114514 已登录

价格:¥ 3

始发站: 杭州东

发车时间: 11:33

到达站: 苏州北

到达时间: 13:00

座位类型: 2

是否中转: 否

上车

<返回

改签

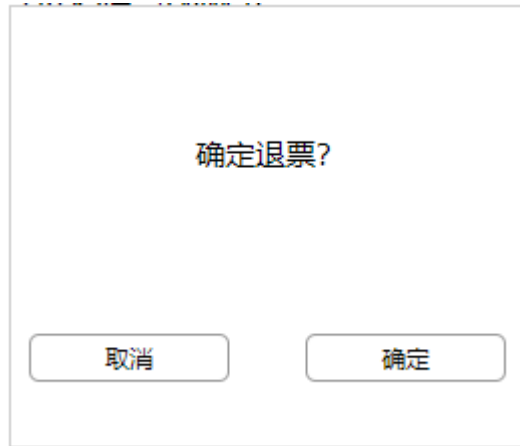
退票

After buying a ticket successfully, you can see your ticket in **Mine** . In this panel, user's information is listed above and 4 buttons are on below.

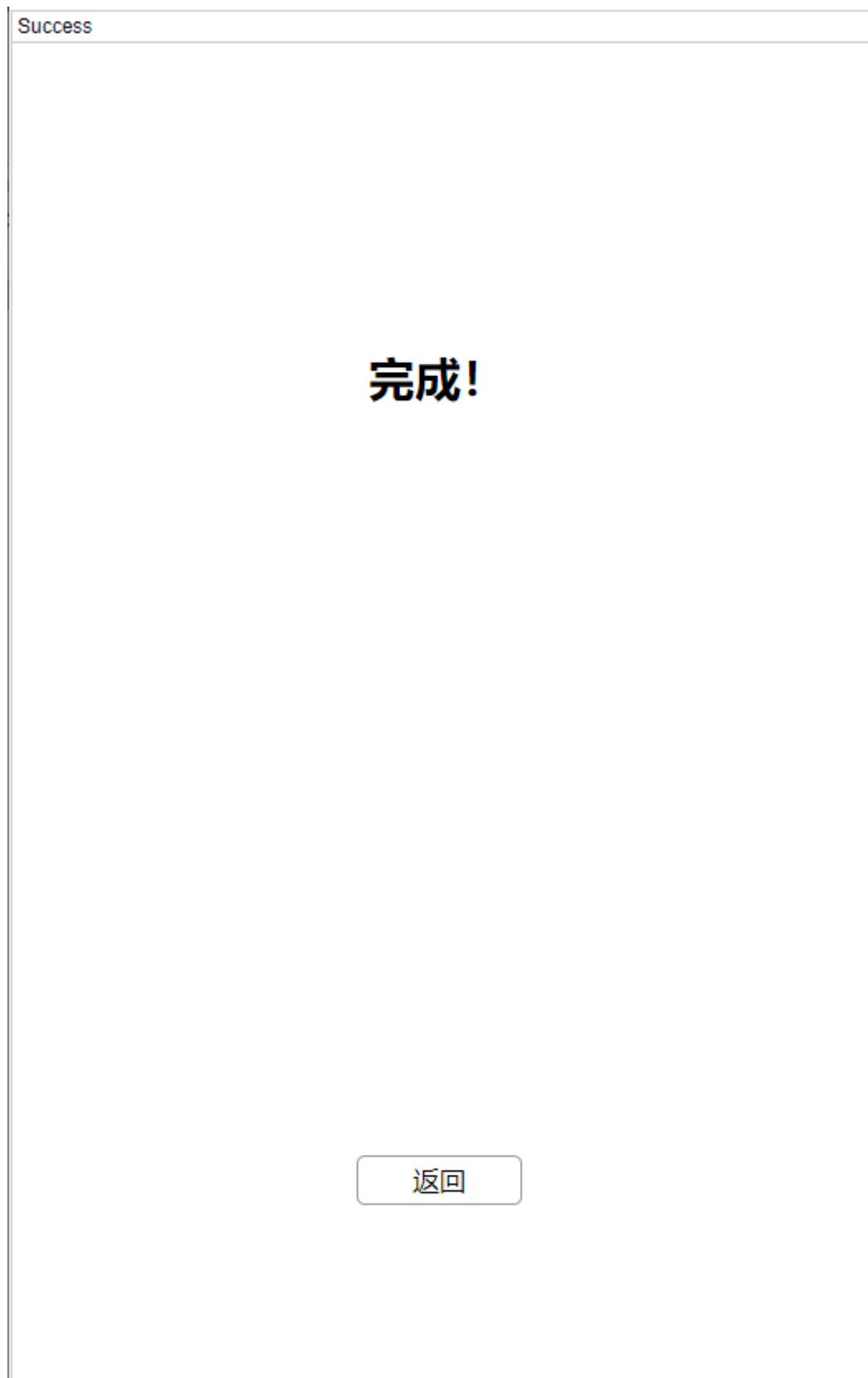
- The **上车** button is on default pressed. If user can't board the train, he/she can unpress the button.
- There are still **返回** button to go back to main page, **退票** button to cancel the ticket and **改签** button to reschedule ticket.

2.8 Cancel Ticket

After pushing 退票 , a reconfirm panel will exist like picture below.



- If user clicks 取消 he will return to his ticket.
- If user clicks 确定 his ticket will be canceled and a success panel will show up.



2.9 Reschedule Ticket

After pushing **改签** button a ui will show up like below.

reschedule

<返回

从

杭州东 ▼

去往

苏州北 ▼

排序

最少耗时 ▼

查询

- User can press 返回 on the upper left to go back.
- Similiar to main page, user can choose the departure station, arrival station and sorting way.
- User can click the button to search available ticket.

reschedule

<返回

杭州东

始 10:03

D13

一等座: 2

需转乘: 无

总耗时: 01H27M

价格: 3

二等座: 1

苏州北

终 11:30

购买

杭州东

始 11:33

D15

一等座: 2

需转乘: 无

总耗时: 01H27M

价格: 3

二等座: 2

苏州北

终 13:00

购买

杭州东

始 13:03

D17

一等座: 2

需转乘: 无

总耗时: 01H27M

价格: 3

二等座: 2

苏州北

终 14:30

购买

杭州东

始 10:03

D21

一等座: 2

需转乘: 南京南

总耗时: 02H27M

价格: 5

二等座: 1

苏州北

终 12:30

D16

购买

- User can press 返回 to go back.
- Still similar to buying ticket, user can press different 购买 to buy tickets.

购买车票

请补齐差价

差价:¥ 0

始发站: 杭州东

发车时间: 11:33

到达站: 苏州北

到达时间: 13:00

是否换乘: 无

座位类型

二等座 ▼

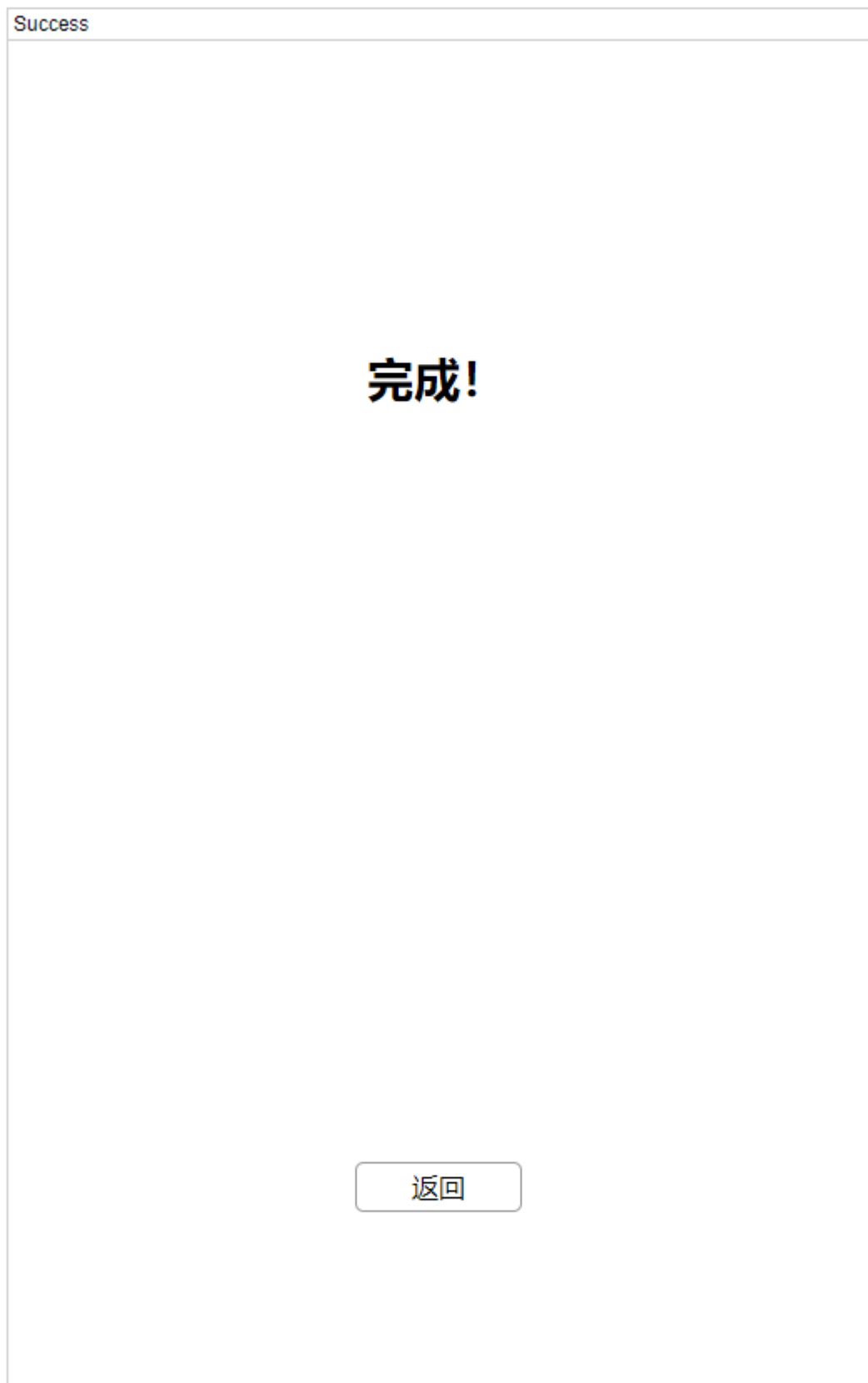
一等座

二等座

返回

确定

- User can see information about the ticket. Specially, the price is the gap price.
- User can choose seat class by choosing the dropdown.
- User can press 返回 to go back.
- User can press 确定 to reschedule ticket and a success panel will show up.



- Press `返回` to go back.

2.10 Time Controller

Time Controller

时间流速

20

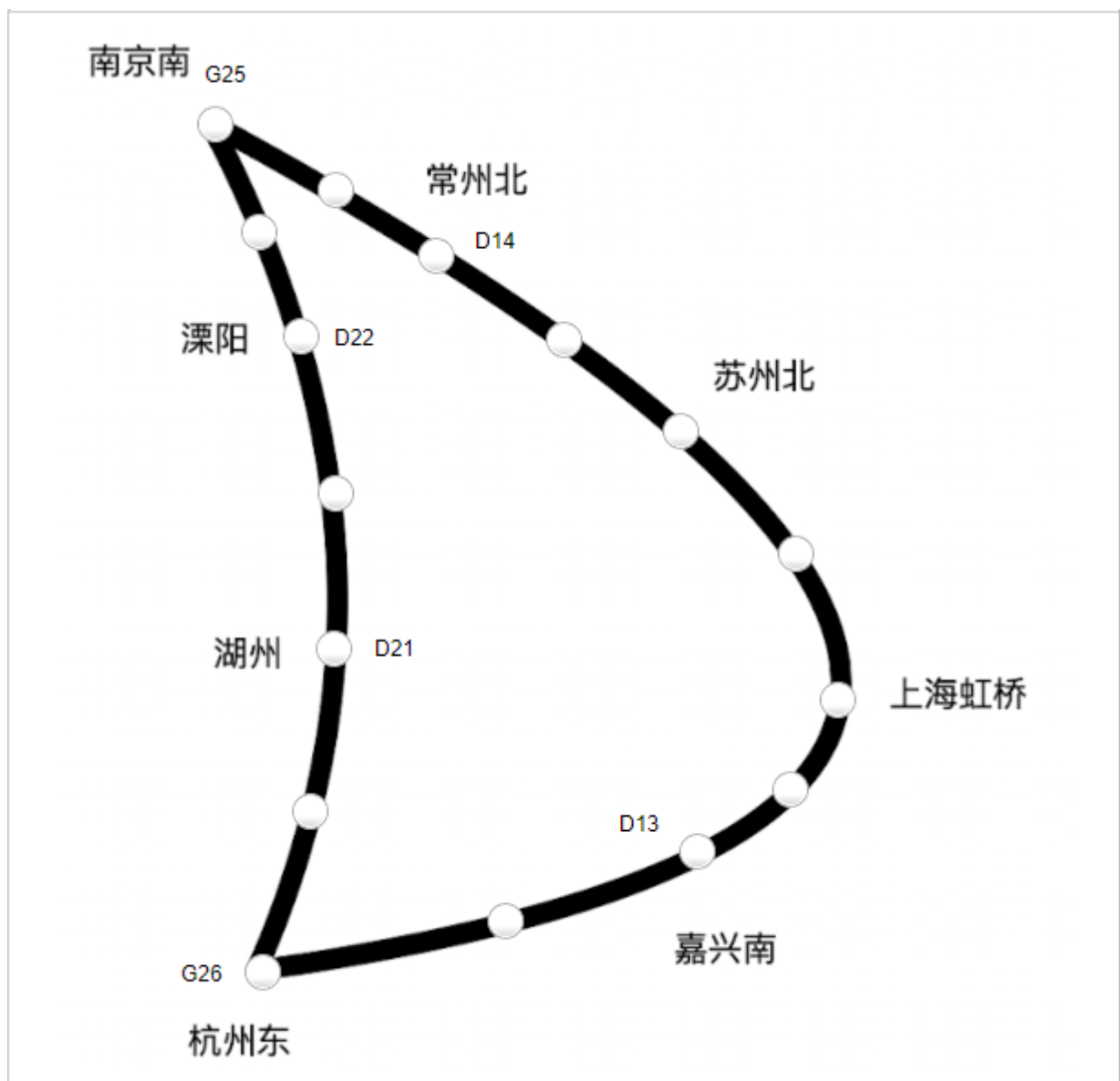
设定

继续

暂停

- Type in editfield and press 设定 to change time speed, you don't have to stop the clock.
- Press 继续 to continue time when clock is paused. In other case there won't be any respond.
- Press 暂停 to pause time when clock is running. In other case there won't be any respond.

2.11 Trainstate Monitor



- As Time goes, you can see train Id move along the railway.

- The movement speed is corresponding to system time speed.

车站	车号	一等座	二等座
苏州北	D11	2	2
常州北	D11	2	2
南京南	D11	2	2
上海虹桥	D12	2	2
嘉兴南	D12	2	2
杭州东	D12	2	2
杭州东	D13	2	2
嘉兴南	D13	2	2
上海虹桥	D13	2	2
苏州北	D13	2	2
常州北	D13	2	2
南京南	D13	2	2
南京南	D14	2	2
常州北	D14	2	2
苏州北	D14	2	2
上海虹桥	D14	2	2
嘉兴南	D14	2	2
杭州东	D14	2	2
杭州东	D15	2	2
嘉兴南	D15	2	2
上海虹桥	D15	2	2
苏州北	D15	2	2
常州北	D15	2	2
南京南	D15	2	2
南京南	D16	2	2
常州北	D16	2	2
苏州北	D16	2	2
上海虹桥	D16	2	2
嘉兴南	D16	2	2
杭州东	D16	2	2
杭州东	D17	2	2
嘉兴南	D17	2	2
上海虹桥	D17	2	2
苏州北	D17	2	2
常州北	D17	2	2
南京南	D17	2	2
南京南	D18	2	2

- User can see the ticket condition in every station.
- When user board the train, seat will not be released.
- Every new day (system time reaches 00:00), this will reset to all 2 tickets.
- User can scroll down to see all informations.
- This table updates every 2 seconds.

