

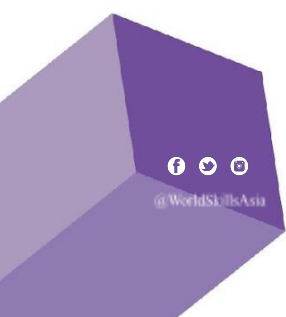
WorldSkills Asia Online Friendly Skills Games 2021

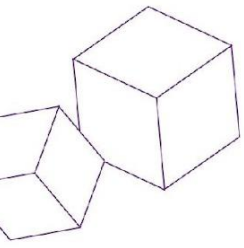
IT Software solutions for business

TEST PROJECT

Session 3

Part 1





Special deadlines

You will have 3 modules and different deadlines during this session.

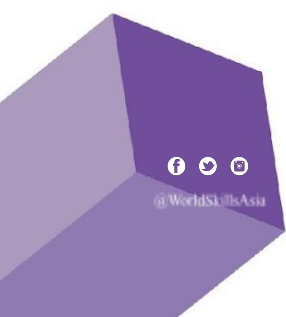
Module	0h - 1h	1h - 2h	2h - 3h	3h - 4h
API	0h - Start with API task	2h - Deadline of API task		
Mobile App			2h - Start with Mobile App	4h - Deadline of Mobile App
Presentation	0h - Start with Presentation			4h - Deadline of Presentation

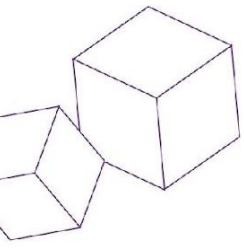
Keep it in mind, that for the modules API and Mobile App you will have only 2 hours sequentially.

Before the break it is necessary to save API source code to Version Control System (GIT) and publish the current API version. After the first 2 hours the API publication will be prohibited and impossible.

After the break you will have a task for Mobile App development. **To work with the mobile application, use the provided ready-made API version** according to the provided documentation.

For the presentation module you will have a whole session (full 4 hours).





API

Your first task today will be to develop an API that can be used by other services.

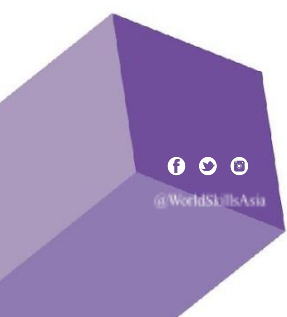
We have developed documentation that you should follow and implement all the functionality required in the documentation within your server application. **It is important to use the same names for endpoints/parameters/status codes and follow response structure (with described properties), because for assessment experts can use automatic frameworks to test your result.**

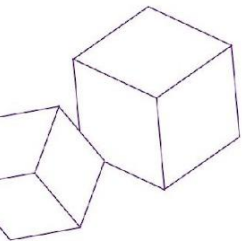
Don't forget to publish your API, because only published versions will be assessed.

Introduction

For the API module you have read (select) access to the common database on MSSQL and MySQL servers - **bll_competitors (mssql - \MSSQLSERVER2,1435; mysql - port 3307)**. You have write access directly only to one table (RoadAction).

Database structure has a small change - now some trucks belong to specific competitors (additional column CompetitorId). For usability testing and assessment of your API methods and algorithms, please, use your competitor ID (workstation number) and password (from info.txt file) where applicable. Also use the corresponding TruckNumber and TransportTaskId.





API Methods

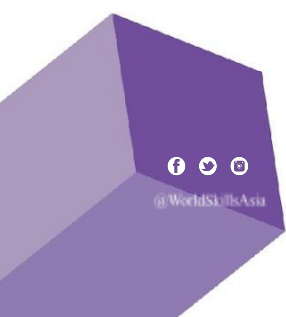
You asked to create 6 methods, overview of which is located below in the table. Detailed information about all methods, parameters, return types and status codes you can find in the provided API documentation (presented as html-document).

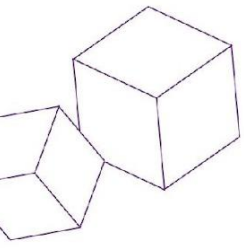
Number	Type	Method	Parameters
1	GET	ActionTypes	-
2	GET	CurrentTruck	competitorId
3	GET	CurrentTransportTask	truckNumber
4	GET	RoadActions	truckNumber
5	POST	RoadActions/SOS	truckNumber and coordinates
6	POST	RoadActions	RoadAction object

Please, read the documentation and timeline rules very carefully before starting development.

For testing road actions generation you can clean your transport task many times through specific API method (because you don't have direct delete right to the database):

PUT - http://web.ws.int:8050/api/ClearTransportTask/{id}?password=correct_pass, where {id} - you transport task id, "correct_pass" - your password (just execute this method in Postman, for example).





Timeline rules

For each transport's task, it is necessary to calculate a time plan, taking into account the working shifts of drivers, rest time and technical breaks, as well as timely refueling.

The route can consist of at least two parts:

1. The cargo must be picked up, having first arrived from the current location to the point;
2. The cargo needs to be delivered to the final point.

To calculate the distances between points, you can use the library provided earlier.

The average speed of any truck is 90 km/h (kilometers per hour). The tank volume and fuel consumption are stored in the characteristics of the truck model model. When the fuel level in tank volume is between 30% and 40%, it is necessary to refuel to a full tank. Before starting the route, it is necessary to fill the full tank at first.

From 1 to 3 drivers can work on a truck (usually 2). You can get data about each driver's age and medical recommendations (time limits for nonstop work). In case the driver has many restrictions (in terms of age and health), the strictest one should be applied.

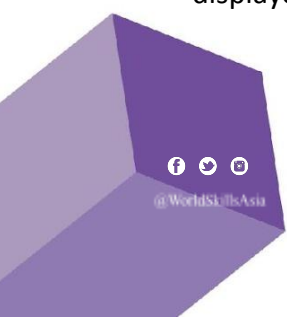
Rules for drivers:

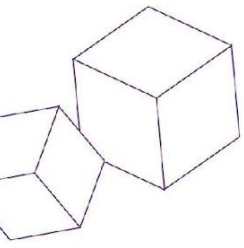
1. Any driver cannot spend more than 8 hours a day in the way.
2. Drivers may have restrictions on continuous work for health reasons. For example, a driver cannot drive a truck for more than 2 hours in a row.
3. Drivers also have age restrictions for work: after 40 years, no more than 4 hours in a row at the wheel; after 60 years, no more than 3 hours.
4. By default, any driver cannot spend more than 5 hours on the road without a break.
5. A break for the driver should be at least 1 hour (it is possible on the road, the main point is not driving).
6. Every 6 hours (possibly more often) it is necessary to make a truck stop for at least for 1 hour.

Thus, the plan must provide for the following types of actions:

- Refuel,
- Truck loading,
- Change driver,
- Rest,
- Truck unloading.

At the moment, various unplanned actions will not have a strong impact on the overall route, so there is **no need to recalculate** the plan when registering emergency events. But all registered actions (scheduled and unplanned) need to be stored and displayed to users.





Presentation

Prepare a PowerPoint presentation based on the system that you designed during the first session. It would be good, if you will use in the presentation results of your designed work such as use case diagram, er-diagram, layouts and other documents.

Imagine that you have to demonstrate your system to potential buyers. Focus on the problems that your system solves, tell us about the competitive advantages of your project over others, how and what business indicators will be affected by the implementation of your system. Prepare answers to possible questions from the audience in advance. The presentation should cover the entire scope of system design required during the first session.

During the presentation, observe the etiquette of the speech. Your speech should be concise (you have no more than 5 minutes at your disposal) but meaningful. You can speak in your native language during your presentation, but the .pptx document should be in english.

You need to save a PowerPoint file with the name Presentation_{competitor number}.pptx and export your presentation to a .pdf file with the same name.

