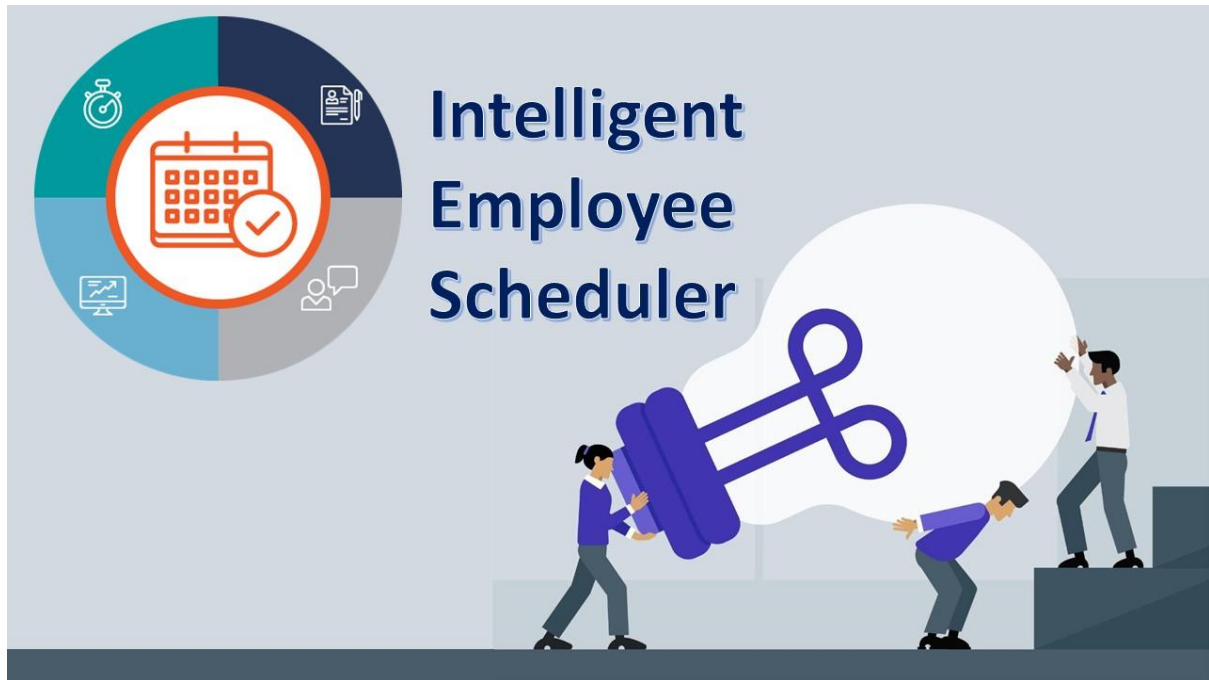


Intelligent Employee Scheduler (LTA MRT)

Environment set up for [iss-vm](#)



< Back End Sub-system >

1. Start backend service, you can navigate to the `/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/SystemCode/services` folder and enter

`mvn clean install`

```
iss-user@iss-vm: ~/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intellige... x
-2hard/8soft
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=B, employeeID=200, employeeGrade=2, preferredLocation=5], job=Job [jobID=1, jobLocation=1, shift=1]]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=C, employeeID=300, employeeGrade=3, preferredLocation=5], job=Job [jobID=2, jobLocation=1, shift=1]]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=A, employeeID=100, employeeGrade=1, preferredLocation=1], job=Job [jobID=3, jobLocation=3, shift=5]]
Hardscore:-2
Softscore:0
-2hard/8soft
2019-05-15 10:45:25.479 [main] DEBUG LS step (1), time spent (2015), score (-2hard/8soft), best score (0hard/0soft), accepted/selected move count (626/3554), picked move (JobAssignment [logger=Log
ger[JobAssignment], employee=Employee [name=A, employeeID=100, employeeGrade=1, preferredLocation=1], shiftAvailability=[0, 1]], job=Job [jobID=1, jobLocation=1, shift=1]) (Employee [name=A, employeeID=1
00, employeeGrade=1, preferredLocation=1], shiftAvailability=[0, 1]) -> Employee [name=B, employeeID=200, employeeGrade=2, preferredLocation=5], shiftAvailability=[2, 3, 5])).
2019-05-15 10:45:25.479 [main] INFO Local Search phase (1) ended: time spent (2015), best score (0hard/0soft), score calculation speed (2231/sec), step total (2).
2019-05-15 10:45:25.479 [main] INFO Solving ended: time spent (2015), best score (0hard/0soft), score calculation speed (2162/sec), phase total (2), environment mode (REPRODUCIBLE).
Best Score:(Hard 0, Soft 1)
After solving schedule.....
JobID: 1, Shift: 1, Location: 1, Employee: A
JobID: 2, Shift: 1, Location: 1, Employee: C
JobID: 3, Shift: 5, Location: 3, Employee: B
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 3.844 s - in com.lrs.roster.OptaplannerUnitTest
[INFO] Results:
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-jar-plugin:3.1.1:jar (default-jar) @ services ---
[INFO] Building jar: /home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/services/target/services-0.0.1-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:2.1.4.RELEASE:repackage (repackage) @ services ---
Downloaded: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-loader-tools/2.1.4.RELEASE/spring-boot-loader-tools-2.1.4.RELEASE.pom (3 KB at 7.3 KB/sec)
Downloaded: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-loader-tools/2.1.4.RELEASE/spring-boot-loader-tools-2.1.4.RELEASE.jar (146 KB at 343.0 KB/sec)
[INFO] Replicating main artifact with repackaged archive
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ services ---
[INFO] Installing /home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/services/target/services-0.0.1-SNAPSHOT.jar to
/home/iss-user/.m2/repository/com/anitime/services/0.0.1-SNAPSHOT/services-0.0.1-SNAPSHOT.jar
[INFO] Installing /home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/services/pon.xml to /home/iss-user/.m2/reposi
tory/com/anitime/services/0.0.1-SNAPSHOT/services-0.0.1-SNAPSHOT.pom
[INFO] BUILD SUCCESS
[INFO] Total time: 01:18 min
[INFO] Finished at: 2019-05-15T10:45:29+08:00
[INFO] Final Memory: 51M/477M
[INFO]
iss-user@iss-vm: /iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/services$
```

```
mvn spring-boot:run
```

[illegible]

```

2019-05-15 10:53:55,155 [main] DEBUG Dirty checking collections
2019-05-15 10:53:55,155 [main] DEBUG Flushed: 1 insertions, 0 updates, 0 deletions to 1 objects
2019-05-15 10:53:55,155 [main] DEBUG Flushed: 0 (re)creations, 0 updates, 0 removals to 0 collections
2019-05-15 10:53:55,155 [main] DEBUG Listing entities:
2019-05-15 10:53:55,155 [main] DEBUG com.antline.services.model.Station(shift=0, name=Bodok, id=56912)
2019-05-15 10:53:55,156 [main] DEBUG Insert into station (name, shift, id) values (?, ?, ?)
2019-05-15 10:53:55,156 [main] DEBUG Closing JPA EntityManager [SessionImpl(4d722380-open)] after transaction
2019-05-15 10:53:55,156 [main] DEBUG Creating new transaction with name [org.springframework.data.jpa.repository.support.SimpleJpaRepository.save]: PROPAGATION_REQUIRED,ISOLATION_DEFAULT
2019-05-15 10:53:55,156 [main] DEBUG Opened new EntityManager [SessionImpl(1300480166-open)] for JPA transaction
2019-05-15 10:53:55,156 [main] DEBUG On TransactionImpl creation, jpaComplianceIsPaarTransactionComplianceEnabled = false
2019-05-15 10:53:55,157 [main] DEBUG begin
2019-05-15 10:53:55,157 [main] DEBUG Exposing JPA transaction as JDBC [org.springframework.orm.jpa.vendor.HibernateJpaDialect$HibernateConnectionHandle@5fe7f316]
2019-05-15 10:53:55,157 [main] DEBUG Loading entity: [com.antline.services.model.Station@16989]
2019-05-15 10:53:55,157 [main] DEBUG select station_0.id as id_2_0_, station_0.name as name2_0_, station_0.shift as shift3_2_0_ from station station_0 where station_0.id=?
2019-05-15 10:53:55,157 [main] DEBUG Done entity load
2019-05-15 10:53:55,157 [main] DEBUG Generated Identifier: 16989, using strategy: org.hibernate.id.Assigned
2019-05-15 10:53:55,158 [main] DEBUG Initiating transaction commit
2019-05-15 10:53:55,158 [main] DEBUG Committing JPA transaction on EntityManager [SessionImpl(1300480166-open)]
2019-05-15 10:53:55,158 [main] DEBUG committing
2019-05-15 10:53:55,158 [main] DEBUG Processing flush-time cascades
2019-05-15 10:53:55,158 [main] DEBUG Dirty checking collections
2019-05-15 10:53:55,158 [main] DEBUG Flushed: 1 insertions, 0 updates, 0 deletions to 1 objects
2019-05-15 10:53:55,158 [main] DEBUG Flushed: 0 (re)creations, 0 updates, 0 removals to 0 collections
2019-05-15 10:53:55,158 [main] DEBUG Listing entities:
2019-05-15 10:53:55,158 [main] DEBUG com.antline.services.model.Station(shift=0, name=Chao Chu Kang, id=16989)
2019-05-15 10:53:55,158 [main] DEBUG Insert into station (name, shift, id) values (?, ?, ?)
2019-05-15 10:53:55,159 [main] DEBUG Closing JPA EntityManager [SessionImpl(1300480166-open)] after transaction
2019-05-15 10:53:55,159 [main] DEBUG Creating new transaction with name [org.springframework.data.jpa.repository.support.SimpleJpaRepository.save]: PROPAGATION_REQUIRED,ISOLATION_DEFAULT
2019-05-15 10:53:55,159 [main] DEBUG Opened new EntityManager [SessionImpl(109998430-open)] for JPA transaction
2019-05-15 10:53:55,159 [main] DEBUG On TransactionImpl creation, jpaComplianceIsPaarTransactionComplianceEnabled = false
2019-05-15 10:53:55,159 [main] DEBUG begin
2019-05-15 10:53:55,159 [main] DEBUG Exposing JPA transaction as JDBC [org.springframework.orm.jpa.vendor.HibernateJpaDialect$HibernateConnectionHandle@49d12a5d]
2019-05-15 10:53:55,159 [main] DEBUG Loading entity: [com.antline.services.model.Station@72518]
2019-05-15 10:53:55,160 [main] DEBUG select station_0.id as id_2_0_, station_0.name as name2_0_, station_0.shift as shift3_2_0_ from station station_0 where station_0.id=?
2019-05-15 10:53:55,160 [main] DEBUG Done entity load
2019-05-15 10:53:55,160 [main] DEBUG Generated Identifier: 72518, using strategy: org.hibernate.id.Assigned
2019-05-15 10:53:55,160 [main] DEBUG Initiating transaction commit
2019-05-15 10:53:55,160 [main] DEBUG Committing JPA transaction on EntityManager [SessionImpl(109998430-open)]
2019-05-15 10:53:55,160 [main] DEBUG committing
2019-05-15 10:53:55,160 [main] DEBUG Processing flush-time cascades
2019-05-15 10:53:55,160 [main] DEBUG Dirty checking collections
2019-05-15 10:53:55,160 [main] DEBUG Flushed: 1 insertions, 0 updates, 0 deletions to 1 objects
2019-05-15 10:53:55,160 [main] DEBUG Flushed: 0 (re)creations, 0 updates, 0 removals to 0 collections
2019-05-15 10:53:55,160 [main] DEBUG Listing entities:
2019-05-15 10:53:55,160 [main] DEBUG com.antline.services.model.Station(shift=0, name=Harbourfront, id=72518)
2019-05-15 10:53:55,160 [main] DEBUG Insert into station (name, shift, id) values (?, ?, ?)
2019-05-15 10:53:55,160 [main] DEBUG Closing JPA EntityManager [SessionImpl(109998430-open)] after transaction
2019-05-15 10:53:55,160 [main] DEBUG Closing JPA EntityManager [SessionImpl(109998430-open)] after transaction
Initialised database successfully.
2019-05-15 10:54:10,815 [HikariPool-1-housekeeper] DEBUG HikariPool-1 - Pool stats (total=10, active=0, idle=10, waiting=0)

```

< Front End Sub-system >

<https://www.techomoro.com/how-to-install-and-setup-angular-7-on-ubuntu-18-04-1/>

2. Install Nodejs

It can be installed by running the command below on our Terminal.

```
curl -sL https://deb.nodesource.com/setup_11.x | sudo -E bash -
```

[sudo] password for iss-user: iss-user

```
iss-user@iss-vn:~$ curl -sL https://deb.nodesource.com/setup_11.x | sudo -E bash -
[sudo] password for iss-user:
## Installing the NodeSource Node.js 11.x repo...

## Populating apt-get cache...

+ apt-get update
Hit:1 http://repo.mongodb.org/apt/ubuntu xenial/mongodb-org/3.2 InRelease
Hit:2 http://repo.mongodb.org/apt/ubuntu xenial/mongodb-org/3.2 Release
Hit:3 https://download.docker.com/linux/ubuntu xenial InRelease
Hit:4 http://ppa.launchpad.net/linuxgndu/sqlitebrowser/ubuntu xenial InRelease
Hit:5 http://packages.ros.org/ros/ubuntu xenial InRelease
Hit:6 http://security.ubuntu.com/ubuntu xenial-security InRelease
Hit:7 http://sg.archive.ubuntu.com/ubuntu xenial InRelease
Hit:8 http://sg.archive.ubuntu.com/ubuntu xenial-backports InRelease
Hit:9 https://sg.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:10 http://sg.archive.ubuntu.com/ubuntu xenial-backports InRelease
Reading package lists... Done

## Confirming "xenial" is supported...

+ curl -sif -o /dev/null 'https://deb.nodesource.com/node_11.x/dists/xenial/Release'

## Adding the NodeSource signing key to your keyring...

+ curl -s https://deb.nodesource.com/gpgkey/nodesource.gpg.key | apt-key add -
OK

## Creating apt sources list file for the NodeSource Node.js 11.x repo...

+ echo 'deb https://deb.nodesource.com/node_11.x xenial main' > /etc/apt/sources.list.d/nodesource.list
+ echo 'deb-src https://deb.nodesource.com/node_11.x xenial main' >> /etc/apt/sources.list.d/nodesource.list

## Running 'apt-get update' for you...

+ apt-get update
Ign:1 http://repo.mongodb.org/apt/ubuntu xenial/mongodb-org/3.2 InRelease
Hit:2 http://repo.mongodb.org/apt/ubuntu xenial/mongodb-org/3.2 Release
Hit:3 http://security.ubuntu.com/ubuntu xenial-security InRelease
Hit:4 http://ppa.launchpad.net/linuxgndu/sqlitebrowser/ubuntu xenial InRelease
Hit:5 http://sg.archive.ubuntu.com/ubuntu xenial InRelease
Get:6 https://deb.nodesource.com/node_11.x xenial InRelease [4,584 B]
Hit:7 https://download.docker.com/linux/ubuntu xenial InRelease
Hit:8 https://download.docker.com/linux/ubuntu xenial InRelease
Hit:9 http://packages.ros.org/ros/ubuntu xenial InRelease
Hit:10 http://sg.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:11 http://sg.archive.ubuntu.com/ubuntu xenial-backports InRelease
Get:12 https://deb.nodesource.com/node_11.x xenial/main amd64 Packages [768 B]
Fetched 5,352 B in 1s (3,169 B/s)
Reading package lists... Done

## Run 'sudo apt-get install -y nodejs' to install Node.js 11.x and npm
## You may also need development tools to build native addons:
```

```
sudo apt-get install -y nodejs
```

```
echo 'deb https://dl.yarnpkg.com/debian/ stable main' | sudo tee /etc/apt/sources.list.d/yarn.list
sudo apt-get update && sudo apt-get install yarn

iss-user@iss-vn:~$ sudo apt-get install -y nodejs
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gyp libjs-inherits libjs-node-uuid libuv1 libuv1-dev linux-headers-4.15.0-36
  linux-headers-4.15.0-36-generic linux-headers-4.15.0-39
  linux-headers-4.15.0-39-generic linux-image-4.15.0-36-generic
  linux-image-4.15.0-38-generic linux-image-4.15.0-39-generic
  linux-modules-4.15.0-36-generic linux-modules-4.15.0-38-generic
  linux-modules-4.15.0-39-generic linux-modules-extra-4.15.0-36-generic
  linux-modules-extra-4.15.0-38-generic linux-modules-extra-4.15.0-39-generic
  node-abbrev node-ansi node-ansi-color-table node-archy node-async
  node-block-stream node-combined-stream node-cookie-jar node-delayed-stream
  node-forever-agent node-form-data node-fs-stream node-fstream-ignore
  node-github-url-from-git node-glob node-graceful-fs node-gyp node-inherits
  node-ltn node-json-stringify-safe node-lockfile node-lru-cache node-mime
  node-minimatch node-mkdirp node-mute-stream node-node-uuid node-npm
  node-normalize-package-data node-npmlog node-once node-osenv node-qjs
  node-read node-read-package-json node-request node-retry node-rimraf
  node-sever node-sha node-signund node-slide node-tar node-tunnel-agent
  node-underscore node-which
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  nodejs-dev npm
The following packages will be upgraded:
  nodejs
1 upgraded, 0 newly installed, 2 to remove and 253 not upgraded.
Need to get 16.2 MB of archives.
After this operation, 52.9 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_11.x xenial/main amd64 nodejs [16.2 MB]
Fetched 16.2 MB in 1s (9,029 kB/s)
(Reading database ... 423003 files and directories currently installed.)
Removing npm (3.5.2-ubuntu4) ...
dpkg: nodejs-dev: dependency problems, but removing anyway as you requested:
  node-gyp depends on nodejs-dev.
Removing nodejs-dev (4.2.6-dfsg-1ubuntu4.2) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for doc-base (0.10.7) ...
Processing 3 removed doc-base files...
(Reading database ... 419946 files and directories currently installed.)
Preparing to unpack .../nodejs_11.15.0-inodesource1_amd64.deb ...
Unpacking nodejs (11.15.0-inodesource1) over (4.2.6-dfsg-1ubuntu4.2) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for doc-base (0.10.7) ...
Processing 1 removed doc-base file...
Setting up nodejs (11.15.0-inodesource1) ...
```


3. Install Angular Cli

It can be installed by:

```
sudo npm install -g @angular/cli
```

```
linux-headers-4.15.0-36-generic linux-headers-4.15.0-38
linux-headers-4.15.0-36-generic linux-headers-4.15.0-39
linux-headers-4.15.0-39-generic linux-image-4.15.0-36-generic
linux-image-4.15.0-38-generic linux-image-4.15.0-39-generic
linux-modules-4.15.0-36-generic linux-modules-4.15.0-38-generic
linux-modules-4.15.0-39-generic linux-modules-extra-4.15.0-36-generic
linux-modules-extra-4.15.0-38-generic linux-modules-extra-4.15.0-39-generic
node-abbrev node-ansi node-ansi-color-table node-archy node-async
node-block-stream node-combined-stream node-cookie-jar node-delayed-stream
node-forever-agent node-form-data node-fstream node-fstream-ignore
node-github-url-from-git node-glob node-graceful-fs node-gyp node-inherits
node-int node-json-stringify-safe node-nodeify node-lru-cache node-mime
node-minimatch node-mkdirp node-mute-stream node-node-uuid node-npm
node-normalize-package-data node-npmlog node-once node-osenv node-q
node-read node-read-package-json node-request node-retry node-rimraf
node-sender node-sha node-signum node-slide node-tar node-tunnel-agent
node-underscore node-which
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  nodejs-dev npm
The following packages will be upgraded:
  nodejs
1 upgraded, 0 newly installed, 2 to remove and 253 not upgraded.
Need to get 16.2 MB of archives.
After this operation, 52.9 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_11.x xenial/main amd64 nodejs amd64 11.15.0-1nodesource1 [16.2 MB]
Fetched 16.2 MB in 1s (9,029 kB/s)
(Reading database ... 428083 files and directories currently installed.)
Removing npm (3.5.2-0ubuntu4) ...
dpkg: nodejs-dev: dependency problems, but removing anyway as you requested:
 node-gyp depends on nodejs-dev.
Removing nodejs-dev (4.2.6-dfsg-1ubuntu4.2) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for doc-base (0.10.7) ...
Processing 3 removed doc-base files...
(Reading database ... 419966 files and directories currently installed.)
Preparing to unpack .../nodejs_11.15.0-1nodesource1_amd64.deb ...
Unpacking nodejs (11.15.0-1nodesource1) over (4.2.6-dfsg-1ubuntu4.2) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for doc-base (0.10.7) ...
Processing 1 removed doc-base file...
Setting up nodejs (11.15.0-1nodesource1) ...
lss-user@lss-vrn:~$ sudo npm install -g @angular/cli
/usr/bin/ng -> /usr/lib/node_modules/@angular/cli/bin/ng
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.9 (node_modules/@angular/cli/node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.9: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
+ @angular/cli@7.3.9
added 295 packages from 180 contributors in 18.125s
lss-user@lss-vrn:~$ node --version
v11.15.0
lss-user@lss-vrn:~$
```

4. Grant user access for npm update check:

```
sudo chown -R $USER:$ (id -gn $USER) /home/iss-user/.config
```

5. Navigate to the /IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-

Intelligent_Employee_Scheduler/SystemCode/frontend folder and enter

```
sudo npm install
```

```
lss-user@lss-vrn:~/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend$ ll
total 428
drwxrwx--- 4 lss-user lss-user 4096 May 15 10:07 ./
drwxrwx--- 6 lss-user lss-user 4096 May 11 10:23 ../
-rwxrwx--- 1 lss-user lss-user 3960 May 11 10:23 angular.json*
-rwxrwx--- 1 lss-user lss-user 6148 May 11 10:23 .DS_Store*
drwxrwx--- 3 lss-user lss-user 4096 May 11 10:23 e2e/
-rwxrwx--- 1 lss-user lss-user 1580 May 11 10:23 package.json*
-rwxrwx--- 1 lss-user lss-user 390001 May 11 10:23 package-lock.json*
-rwxrwx--- 1 lss-user lss-user 1052 May 11 10:23 README.md*
drwxrwx--- 4 lss-user lss-user 4096 May 11 10:23 src/
-rwxrwx--- 1 lss-user lss-user 457 May 11 10:23 tsconfig.json*
-rwxrwx--- 1 lss-user lss-user 1096 May 11 10:23 tsint.json*
lss-user@lss-vrn:~/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend$ sudo npm install
> node-sass@4.11.0 install /home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass
> node scripts/install.js
Unable to save binary /home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass/vendor/linux-x64-67: (Error: EACCES: permission denied, mkdir '/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass/vendor')
    at Object.mkdirSync (fs.js:773:3)
    at sync (/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/mkdirp/index.js:71:13)
    at Function.sync (/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/mkdirp/index.js:77:24)
    at checkAndDownloadBinary (/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass/scripts/install.js:114:11)
    at Object.<anonymous> (/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass/scripts/install.js:157:3)
    at Module._compile (internal/modules/cjs/loader.js:816:30)
    at Object.Module._extensions..js (internal/modules/cjs/loader.js:827:10)
    at Module.load (internal/modules/cjs/loader.js:645:32)
    at Function.Module._load (internal/modules/cjs/loader.js:620:12)
    at Function.Module.runMain (internal/modules/cjs/loader.js:877:12)
  errno: -13,
  syscall: 'mkdir',
  code: 'EACCES',
  path:
    /home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass/vendor
}
> node-sass@4.11.0 postinstall /home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass
> node scripts/build.js
Building: /usr/bin/node /home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-gyp/bin/node-gyp.js rebuild --verbose --libsass_ext= --libsass_cflags= --libsass_ldflags= --libsass_library=
gyp info it worked! it ended with 0
gyp verb cli [ '/usr/bin/node',
gyp verb cli   '/home/lss-user/iss-vn-program/iss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-gyp/bin/node-gyp.js',
gyp verb cli   '--rebuild',
```

6. Update user access:

```
sudo chown -R $USER:$USER *
```

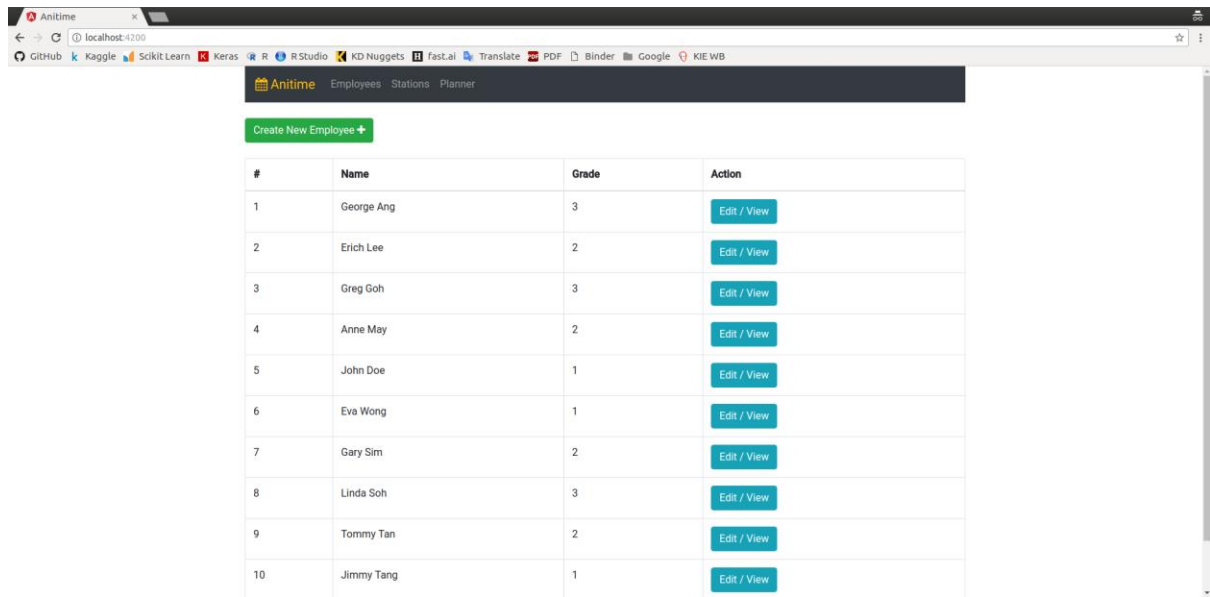
7. Run command

```
ng serve
```

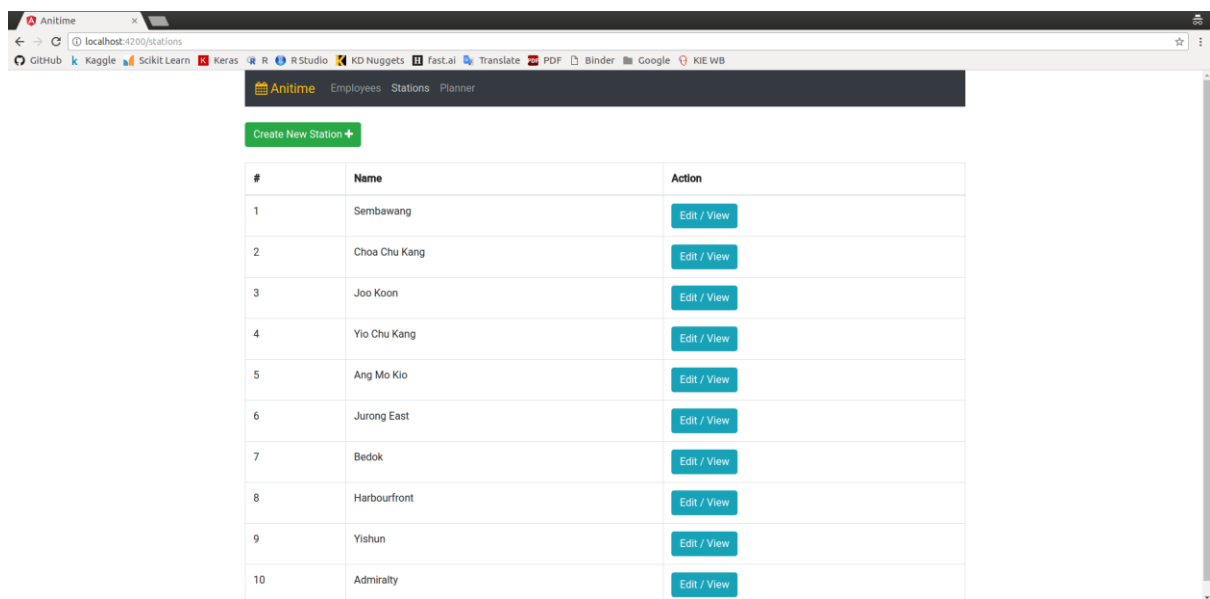
```
iss-user@iss-vm: ~/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intellige...  
930899adac6a70a73647e4265eff5f5b5da2665788cdcf98bc71ab104c5989", "node-v11.15.0-win-x64.zip": "f3cef58acf566724a5ec5df7697f5527d733cfafe6c7c486a39358aee6cdf8", "node-v11.15.0-win-x86.7z": "fef827207376d9  
0712fc0e5016519d0e993bac42bc1025f54ed17f0711f8", "node-v11.15.0-win-x86.zip": "44265e6474501ce34c2ce0cfe3b0c3bbd1ce8b35d6f02f828f249451a7a", "node-v11.15.0-x64.msi": "4183c648fe37aa07242543164097d3f  
d921dbb6e850bb245794ad4832b1eb", "node-v11.15.0-x86.msi": "b2d824007bfa20b2194830f53f9a58f48a829ecdc78e0820fea7927a78e9f48", "win-x64/node.exe": "3507c207637df8cfc17ed9705db80f61eb33f25636c034747450d35bf3  
f0db", "win-x64/node.lib": "5d3b7f0cfec81d800544377c2dd9ea8c02b8080ea8c7c395342219c48a49b", "win-x64/node_pdb.7z": "8b8d643881d0f499fc587509da10d4fec3d6740be46d4aa2deea07cdd80b77b", "win-x64/node_pdb.zip"  
: "27e7b1c4549d0e81a12b792408047aed939ee0e543231ca0221124a360", "win-x86/node.exe": "70b09f16f31316d97bd714271759fde10bc481bf1eb18cef23-a0801419a9c72", "win-x86/node.lib": "f0e3ac32d04d170b3d697d97f7e425  
20a25f9e27d9d75bbcaa3adb8ee2125d", "win-x86/node_pdb.7z": "e55446bd49f5a5de19008e7983bdc7b0b3b777258d3ac7ece34542c58ad3a", "win-x86/node_pdb.zip": "4d9f45f55757ea3b59b8459b70b74c1a688b83dbb922ca81171374181  
c68847775"}  
gyp verb download contents checksum ["node-v11.15.0-headers.tar.gz": "e738ca0fa48e1b43a4eddb83accb7ed6ce5aa27e74ccfd26989eb87a0add509"]  
gyp verb validating download checksum for node-v11.15.0-headers.tar.gz (e738ca0fa48e1b43a4eddb83accb7ed6ce5aa27e74ccfd26989eb87a0add509 == e738ca0fa48e1b43a4eddb83accb7ed6ce5aa27e74ccfd26989eb87a0add509)  
gyp verb get node dir target node version installed: 11.15.0  
gyp verb build dir attempting to create "build" dir: /home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/n  
ode_modules/node-sass/build  
gyp ERR! configure error  
gyp ERR! stack Error: EACCES: permission denied, mkdir '/home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intelligent_Employee_Scheduler/fron  
tend/node_modules/node-sass/build'  
gyp ERR! System Linux 4.15.0-47-generic  
gyp ERR! command "/usr/bin/node" "/home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-gy  
p/bin/node-gyp.js" "rebuild" "--verbose" "--libsass_ext=" "--libsass_cflags=" "--libsass_ldflags=" "--libsass_library="   
gyp ERR! cwd /home/iss-user/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend/node_modules/node-sass  
gyp ERR! node -v v11.15.0  
gyp ERR! node-gyp -v v3.8.0  
gyp ERR! not ok  
Build failed with error codes: 1  
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.7 (node_modules/fsevents):  
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.7: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})  
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: node-sass@4.11.0 (node_modules/node-sass):  
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: node-sass@4.11.0 postinstall: node scripts/build.js  
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: Exit status 1  
added 1038 packages from 1014 contributors and audited 42488 packages in 36.797s  
found 3 vulnerabilities (1 low, 2 high)  
run 'npm audit fix' to fix them, or 'npm audit' for details  
iss-user@iss-vm: ~/iss-vm-program/iss-intelligent-reasoning-systems/git-IRS-RS/2/IRS-RS-2019-03-09-ISIPT-GRP-2-GOH-Intelligent_Employee_Scheduler/frontend$ ng serve  
Your global Angular CLI version (7.3.9) is greater than your local  
version (7.3.8). The local Angular CLI version is used.  
To disable this warning use "ng config -g cli.warnings.versionMismatch false".  
** Angular Live Development Server is listening on localhost:4200, open your browser on http://localhost:4200/ **  
Date: 2019-05-15T02:10:25.304Z  
Hash: 4e838cc08486a807e02  
[time: 3029ms]  
chunk (es2015-polyfills) es2015-polyfills.js, es2015-polyfills.js.map (es2015-polyfills) 284 kB [initial] [rendered]  
chunk (main) main.js, main.js.map (main) 79.4 kB [initial] [rendered]  
chunk (polyfills) polyfills.js, polyfills.js.map (polyfills) 236 kB [initial] [rendered]  
chunk (runtime) runtime.js, runtime.js.map (runtime) 6.08 kB [entry] [rendered]  
chunk (styles) styles.js, styles.js.map (styles) 1.05 MB [initial] [rendered]  
chunk (vendor) vendor.js, vendor.js.map (vendor) 7.03 MB [initial] [rendered]  
webpack: Compiled successfully.
```

If you get any npm WARN messages you can ignore them as you should still be able to do an **ng serve**. As from the second screenshot, we can still serve the frontend.

8. Open browser, go to: **http://localhost:4200/**



| # | Name | Grade | Action |
|----|------------|-------|-------------|
| 1 | George Ang | 3 | Edit / View |
| 2 | Erich Lee | 2 | Edit / View |
| 3 | Greg Goh | 3 | Edit / View |
| 4 | Anne May | 2 | Edit / View |
| 5 | John Doe | 1 | Edit / View |
| 6 | Eva Wong | 1 | Edit / View |
| 7 | Gary Sim | 2 | Edit / View |
| 8 | Linda Soh | 3 | Edit / View |
| 9 | Tommy Tan | 2 | Edit / View |
| 10 | Jimmy Tang | 1 | Edit / View |



| # | Name | Action |
|----|---------------|-------------|
| 1 | Sembawang | Edit / View |
| 2 | Choa Chu Kang | Edit / View |
| 3 | Joo Koon | Edit / View |
| 4 | Yio Chu Kang | Edit / View |
| 5 | Ang Mo Kio | Edit / View |
| 6 | Jurong East | Edit / View |
| 7 | Bedok | Edit / View |
| 8 | Harbourfront | Edit / View |
| 9 | Yishun | Edit / View |
| 10 | Admiralty | Edit / View |

Anitime
Employees Stations Planner

Search Employees

| Employee | Grade | Preferred Station | Mon AM | Mon PM | Tue AM | Tue PM | Wed AM | Wed PM | Thu AM | Thu PM | Fri AM | Fri PM | Action |
|------------|-------|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------|
| George Ang | 3 | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Add |

Employees Added

| # | First Name | Last Name |
|---|------------|-----------|
| 1 | Linda | Soh |
| 2 | John | Doe |
| 3 | George | Ang |

Search Station

| Station | Mon AM | Mon PM | Tue AM | Tue PM | Wed AM | Wed PM | Thu AM | Thu PM | Fri AM | Fri PM | Action |
|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------|
| Yishun | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Add |

Stations Added




| # | Name | Shift |
|---|-----------|-------|
| 1 | Admiralty | 0 |
| 2 | Sembawang | 7 |
| 3 | Yishun | 4 |

Solve

Terminal
File
Edit
View
Search
Terminal
Tools
Help

Anitime
Employees Stations Planner

Schedule for the week

| Employee | Grade | Mon AM | Mon PM | Tue AM | Tue PM | Wed AM | Wed PM | Thu AM | Thu PM | Fri AM | Fri PM |
|------------|---------|---|--------|--------|--------|---|--------|---|--------|--------|--------|
| Linda Soh | Grade 3 |  | | | | | | | | | |
| John Doe | Grade 1 | | | | | | |  | | | |
| George Ang | Grade 3 | | | | |  | | | | | |

```

lss-user@lss-vm: ~/lss-vm-program/lss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GOH-Intelligent_Employee_Scheduler/services
lss-user@lss-vm: ~/lss-vm-program/lss-intelligent-reasoning-systems/glt-IRS-RS/2/IRS-RS-2019-03-09-IS1PT-GRP-2-GO...
-ihard/0soft
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=GeorgeAng, employeeID=1218, employeeGrade=3, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=87184, jobLocation=87184, shift=0]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=LindaSoh, employeeID=66143, employeeGrade=3, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=6861, jobLocation=6861, shift=7]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=JohnDoe, employeeID=22327, employeeGrade=1, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=79444, jobLocation=79444, shift=4]
Hardscore:0
Softscore:0
0hard/0soft
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=GeorgeAng, employeeID=1218, employeeGrade=3, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=87184, jobLocation=87184, shift=0]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=JohnDoe, employeeID=22327, employeeGrade=1, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=6861, jobLocation=6861, shift=7]
JobAssignment:JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=JohnDoe, employeeID=22327, employeeGrade=1, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]], job=Job [jobID=79444, jobLocation=79444, shift=4]
Hardscore:-1
Softscore:0
-ihard/0soft
2019-05-15 10:58:47,179 [http-nio-8082-exec-7] DEBUG LS step (1), time spent (2024), score (-ihard/0soft), best score (0hard/0soft), accepted/selected move count (486/2473), picked n
ve [JobAssignment [logger=Logger[JobAssignment], employee=Employee [name=JohnDoe, employeeID=22327, employeeGrade=1, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]],
, job=Job [jobID=6861, jobLocation=6861, shift=7]] [Employee [name=JohnDoe, employeeID=22327, employeeGrade=1, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]]
Employee [name=LindaSoh, employeeID=66143, employeeGrade=3, preferredLocation=0], shiftAvailability=[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]]] -> Emp
2019-05-15 10:58:47,179 [http-nio-8082-exec-7] INFO Local Search phase (1) ended: time spent (2024), best score (0hard/0soft), score calculation speed (1638/sec), step total (2)
2019-05-15 10:58:47,180 [http-nio-8082-exec-7] INFO Solving ended: time spent (2025), best score (0hard/0soft), score calculation speed (1617/sec), phase total (2), environment mode (REPROD
UCIBLE).
Solution:JobSchedule.null
After solving schedule.....
JobID: 87184, Shift: 0, Location: 87184, Employee: LindaSoh
JobID: 6861, Shift: 7, Location: 6861, Employee: JohnDoe
JobID: 79444, Shift: 4, Location: 79444, Employee: GeorgeAng
.....
2019-05-15 10:58:47,181 [http-nio-8082-exec-7] DEBUG Using 'application/json', given [application/json, text/plain, */*] and supported [application/json, application/*+json, application/json

```