HUAWEI-NUS Innovation Challenge

Kick Off Session

09 February 2023

In partnership with: Audaque 华傲数据

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Agenda

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2. Opening Message	Charles Cheng
3. Rules and Judging Criteria	Quek Khor Ping
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Welcome Message

James Pang

Co-Director

NUS Business Analytics Centre

Opening Message

Charles Cheng

Managing Director

Huawei International

HUAWEI

Rules and Judging Criteria

Quek Khor Ping

Deputy Director

NUS Business Analytics Centre

Outline

1. Problem Statement
2. Team Prizes
3. Timeline
4. Judging Criteria
5. Registration
6. Rules and Regulations

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1. Problem Statement

The "Buy Low, Sell High" strategy is all about timing the market.

As electronic trading dominates the stock market, thousands of transactions can be made within the blink of an eye. Along with these transactions, massive amounts of data with different varieties will be recorded. How can the public use such historical transaction data to devise a better trading strategy for profit?

In this innovation challenge, we seek to tap into the ideas of the participants to build a trading model based on the provided historical transaction data to complete the trading task. Participants will be provided with a basket of stocks, of which some are required to "sell out", while others are required to "buy in". Besides completing the trading task, a good model will always buy in at the lowest possible price, and sell out at the highest price during the transaction period. The trading models of the participants will be evaluated against real stock market data.

More details can be found at https://www.sg-innovationchallenge.org/

2. Team Prizes

- ***Grand Prize*** ***$10,000***
- ***Second Prize*** ***$5,000***
- ***Third Prize*** ***$3,000***

Note: Plus Trophies and Certificates

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3. Timeline

Key Dates	Time	Milestones	Venue
09 Feb 23	18:30	Kick Off: Introduction to Innovation Challenge	NUS LT19 / Online
16 Feb 23	18:30	Enablement Session 1	NUS LT19 / Online
23 Feb 23	18:30	Enablement Session 2	NUS LT19 / Online
27 Feb 23	23:59	Registration Close	Online
01 Mar 23		Submission Start	Online
09 Apr 23	23:59	Submission Close	Online
12 Apr 23		Announcement of Final 8 Teams	Online
27 Apr 23	23:59	2nd Submission Close	Online
29 Apr 23		Final Presentation and Award	To be Announced

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4. Judging Criteria

Round 1 *(To select the final 8 teams)*

- ***Effectivity of solution*** *(80%)* - based on the daily ranking of the team.
- ***Presentation deck*** *(20%)* - based on the quality of the presentation deck

Round 2 *(To select the top 3 teams)*

- ***Effectivity of solution*** *(50%)* - based on the daily ranking of the team.
- ***Innovation of solution*** *(30%)* - based on innovative ideas in the solution, model, algorithm, or data sources.
- ***Storytelling and presentation of the solution*** *(20%)* - based on the quality of the final day presentation and demo.

5. Registration

General Information

- *Students are to form teams with a minimum of four participants and up to a maximum of six participants. Each student is permitted to join only one team.*
- *Each team must provide the following:*
  - *Team Name*
  - *Institution / Faculty and Programme*
  - *Names of members in the team*
  - *Student registration numbers of the members in the team*
  - *Email addresses of the members of the team*
  - *Contact numbers of the members of the team*
- *Registration opens now and closes on **27 Feb 2023** at 23:59*
- *Registration and all solutions are to be submitted at: https://www.sg-innovationchallenge.org/*
- *Solutions submission opens on **1 Mar 2023** at 12:00 and closes on **9 Apr 2023** at 23:59*
- *Further details and announcements will be shared on https://www.sg-innovationchallenge.org/*

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5. Registration (cont’)

Eligibility

The NUS-Huawei Analytics Innovation Challenge 2023 (the “Competition”) is open to all students from universities and polytechnics in Singapore. Participants must posses valid student identity documents(e.g. student or matriculation card) and NUS MSBA alumni.

Deliverables

Every team must solve the business challenge provided at the Competition and submit the solution to NUS Business Analytics Centre (“NUS BAC”) in the manner and by the time stipulated.

Rules and Regulations

- All submission(s) must be original and never been submitted for other competitions in or outside Singapore and has never been used for other purposes.
- Any form of plagiarism is not allowed.
- NUS BAC shall not be liable for entries that are lost or contain corrupted data due to whatever reasons.
- NUS BAC staff, Huawei and Audaque staff and immediate family members of the staff are not eligible to participate in the Competition.

6. Rules and Regulations

Important Note

By registering for this competition, you consent to NUS BAC's collection, use and disclosure of your personal data in accordance with NUS' Privacy Policy, in order to administer the competition for NUS BAC's marketing and promotional purposes, to attribute you as the inventor/author of the invention/work that you create for the purposes of the competition, administer assignment of the rights to the invention or work to NUS BAC (if applicable) and/or for workshops organized by the sponsors of the competition.

Non-Disclosure Agreement

All information shared by NUS BAC, Huawei and Audaque are to be used solely for the purposes of the competition.

More details can be found at SG-AI-Competition/HUAWEI NUS Innovation Challenge 2023 Rules.pdf at e7abb01e9d0505283a2127f6faf34071dd6d7a82 · cryptodogofmax/SG-AI-Competition · GitHub

If you have any questions pertaining to the participation of the innovation challenge, email msba@nus.edu.sg with the subject title "NUS-Huawei Analytics Innovation Challenge 2023".

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Problem Statement Introduction

Chen Weijie

Postdoc Researcher

Audaque

Outline

1. Task Objectives
2. Data Source
3. Transaction Programs Submission
4. Task Detail Description
5. Ranking Evaluation Criteria

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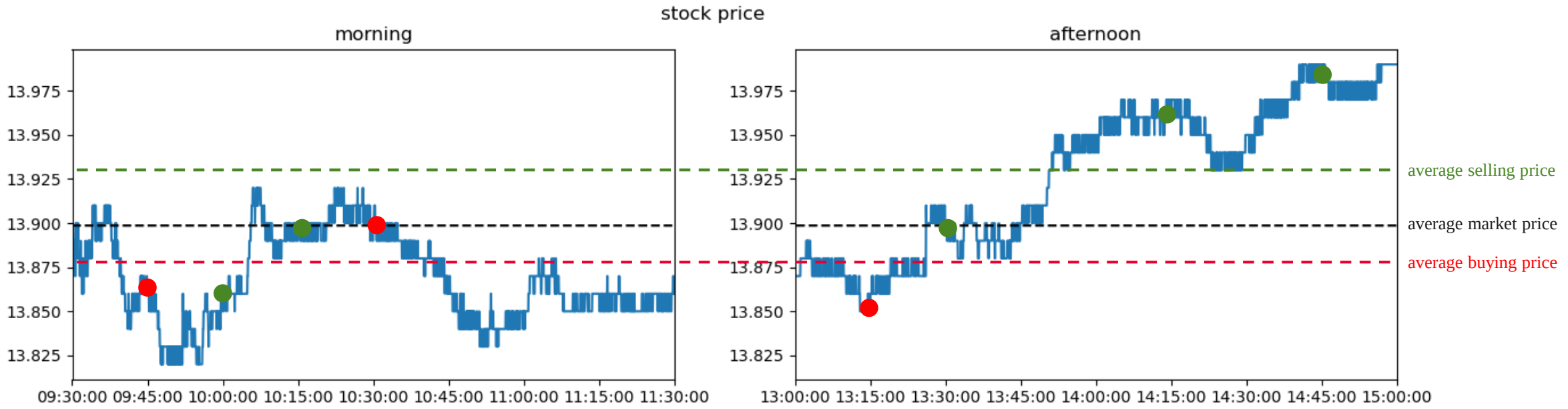
1. Task Objectives

- This competition requires the contestants to establish the stock timing model, spontaneously find the best trading opportunity to complete the trading, and strive for the lowest overall trading cost of the stock.



- Buy: 9:45:00 –> 20 10:30:00 –> 20 13:15:00 –> 60
- Sell: 10:00:00 –> 10 10:15:00 –> 10 13:30:00 –> 20 14:15:00 –> 20 14:45:00 –> 40

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1. Task Objectives

- The competition offers 500 stocks, each stock must complete buy and sell of 100 shares a day, the number of each trading can be distributed freely.
- The trading time of each stock is from 9:30:00 to 11:30:00 and 13:00:00 to 15:00:00 daily.
- The contestant needs to select several optimal time points for each stock to trade within the trading time.
- The average price of the transaction should strive to be better than the average market price of the stock throughout the day, which is **the average buying price is lower than the average market price, and the average selling price is higher than the average market price**.

Code	Buy target	Sell target
000009.SZ	100	100
000012.SZ	100	100
000021.SZ	100	100
000027.SZ	100	100
000031.SZ	100	100
000039.SZ	100	100
000050.SZ	100	100
000060.SZ	100	100
000062.SZ	100	100
000089.SZ	100	100
…	…	…
688390.SH	100	100
688521.SH	100	100
688538.SH	100	100
688567.SH	100	100
688690.SH	100	100
688772.SH	100	100
688777.SH	100	100
688779.SH	100	100
688819.SH	100	100
688981.SH	100	100

2. Data Source

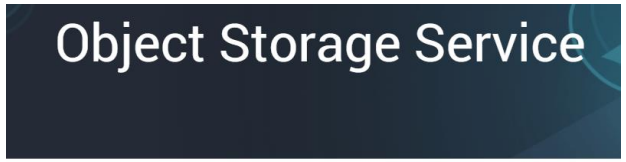
This competition provides the original market data and demo trading programs for the contestants.

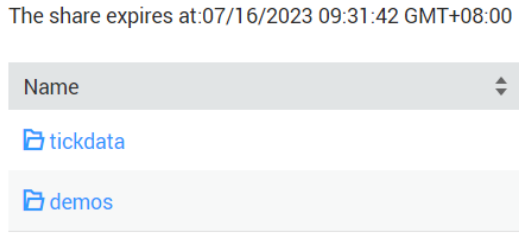
1) Original market data (tickdata):

- 100 tickdata files
- each file includes 500 China A-share sampled stocks data in a day

2) Demo trading programs (demos):

- demo1
- demo2
- evaluation.py





Shared Folder NUS-BAC-competition2023 › tickdata

The share expires at:07/16/2023 09:31:42 GMT+08:00

Enter an object name prefix.

Name	Storage Class	Size	Last Modified	Operation
Back				
tickdata_20221229.csv	Standard	729.29 MB	02/02/2023 12:07:52 GMT+08:00	Download Download As
tickdata_20221228.csv	Standard	730.20 MB	02/02/2023 12:07:50 GMT+08:00	Download Download As
tickdata_20221227.csv	Standard	725.15 MB	02/02/2023 12:07:50 GMT+08:00	Download Download As
tickdata_20221226.csv	Standard	729.25 MB	02/02/2023 12:07:48 GMT+08:00	Download Download As
tickdata_20221223.csv	Standard	722.57 MB	02/02/2023 12:07:47 GMT+08:00	Download Download As
tickdata_20221222.csv	Standard	729.00 MB	02/02/2023 12:07:46 GMT+08:00	Download Download As
tickdata_20221221.csv	Standard	731.62 MB	02/02/2023 12:07:44 GMT+08:00	Download Download As

Shared Folder NUS-BAC-competition2023 › demos

The share expires at:07/16/2023 09:31:42 GMT+08:00

Enter an object name prefix.

Name	Storage Class	Size	Last Modified	Operation
Back				
demo2	–	–	–	
demo1	–	–	–	
evaluation.py	Standard	2.11 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As

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2. Data Source

Original market data:

- time range from 2022/8/5 to 2022/12/30, a file a day, covering 100 trading days.
- each file includes data for 500 China A-share sampled stocks.
- each file contains 55 fields, as shown in Table1.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	COLUMN01	COLUMN02	COLUMN03	COLUMN04	COLUMN05	COLUMN06	COLUMN07	COLUMN08	COLUMN09	COLUMN10	COLUMN11	COLUMN12	COLUMN13	COLUMN14	COLUMN15	COLUMN16	COLUMN17	COLUMN18	COLUMN19	COLUMN20
2	0	601888.SH	93000000	1950800	1950800	1950700	1950700	1950800	1951000	1952000	1953000	1953800	1954000	1955000	1956000	1959600	1960000	10308	4800	4800
3	1	002056.SZ	93000000	211400	211400	210900	211000	211300	211400	211500	211600	211700	211800	211900	212000	212100	212200	10200	4364	2700
4	2	002078.SZ	93000000	114100	114200	114100	114100	114100	114400	114600	114800	115000	115100	115200	115300	115500	115600	680	4700	2000
5	3	002078.SZ	93000000	114100	114200	114100	114100	114100	114400	114600	114800	115000	115100	115200	115300	115500	115600	680	4700	2000
6	4	002080.SZ	93000000	255000	255000	254500	254900	254700	254900	255000	255100	255500	255600	255800	255900	256200	256300	500	1000	10467
7	5	002080.SZ	93000000	255000	255000	254500	254900	254700	254900	255000	255100	255500	255600	255800	255900	256200	256300	500	1000	10467
8	6	002081.SZ	93000000	46300	46500	46300	46400	46400	46500	46600	46700	46800	46900	47000	47100	47200	47300	400	38700	37300
9	7	002081.SZ	93000000	46300	46500	46300	46400	46400	46500	46600	46700	46800	46900	47000	47100	47200	47300	400	38700	37300
10	8	002110.SZ	93000000	54700	54900	54700	54700	54700	54800	54900	55000	55100	55200	55300	55400	55500	55600	400	19000	91000
11	9	002110.SZ	93000000	54700	54900	54700	54700	54700	54800	54900	55000	55100	55200	55300	55400	55500	55600	400	19000	91000
12	10	002127.SZ	93000000	47700	47700	47600	47700	47700	47800	47900	48000	48100	48200	48300	48400	48500	48600	9700	29000	26700
13	11	002127.SZ	93000000	47700	47700	47600	47700	47700	47800	47900	48000	48100	48200	48300	48400	48500	48600	9700	29000	26700
14	12	002138.SZ	93000000	264000	264000	263600	263900	263900	264000	264100	264500	264600	264800	264900	265000	265200	265400	600	100	500
15	13	002138.SZ	93000000	264000	264000	263600	263900	263900	264000	264100	264500	264600	264800	264900	265000	265200	265400	600	100	500
16	14	002128.SZ	93000000	126500	126600	126500	126600	126700	126800	126900	127000	127100	127200	127300	127400	127500	127600	900	15600	1100
17	15	002128.SZ	93000000	126500	126600	126500	126600	126700	126800	126900	127000	127100	127200	127300	127400	127500	127600	900	15600	1100
18	16	002056.SZ	93000000	211400	211400	210900	211000	211300	211400	211500	211600	211700	211800	211900	212000	212100	212200	10200	4364	2700
19	17	002065.SZ	93000000	61800	62000	61800	62000	62000	62100	62200	62300	62400	62500	62600	62700	62800	62900	29700	43600	28500
20	18	002065.SZ	93000000	61800	62000	61800	62000	62000	62100	62200	62300	62400	62500	62600	62700	62800	62900	29700	43600	28500
21	19	002030.SZ	93000000	175700	176000	175700	176000	176000	176100	176200	176300	176400	176500	176600	176700	176800	176900	1800	3300	7200
22	20	001872.SZ	93000000	152000	152000	152000	152000	152500	152600	152900	153500	153600	153800	153900	154000	154200	154500	400	200	100
23	21	002002.SZ	93000000	36100	36100	36000	36000	36100	36200	36300	36400	36500	36600	36700	36800	36900	37000	40700	225800	69600
24	22	002002.SZ	93000000	36100	36100	36000	36000	36100	36200	36300	36400	36500	36600	36700	36800	36900	37000	40700	225800	69600
25	23	001914.SZ	93000000	158900	159800	158900	159800	159800	159900	160000	160700	160900	161000	161300	161700	161800	162000	200	2700	1100
26	24	001914.SZ	93000000	158900	159800	158900	159800	159800	159900	160000	160700	160900	161000	161300	161700	161800	162000	200	2700	1100
27	25	002010.SZ	93000000	54800	54800	54800	54800	54900	55000	55100	55200	55400	55500	55600	55700	55800	55900	69600	100	23600
28	26	002010.SZ	93000000	54800	54800	54800	54800	54900	55000	55100	55200	55400	55500	55600	55700	55800	55900	69600	100	23600
29	27	002131.SZ	93000000	18500	18500	18500	18500	18600	18700	18800	18900	19000	19100	19200	19300	19400	19500	1587054	1022600	1261500
30	28	002028.SZ	93000000	447300	447300	447000	447000	449300	449500	449900	450000	450100	451000	452300	452800	453000	454300	900	100	100
31	29	002019.SZ	93000000	115600	115600	115600	115600	115700	115900	116000	116300	116400	116500	116700	116800	116900	117000	200	2400	7400
32	30	002019.SZ	93000000	115600	115600	115600	115600	115700	115900	116000	116300	116400	116500	116700	116800	116900	117000	200	2400	7400
33	31	002025.SZ	93000000	723900	725100	723900	724000	725100	728000	728700	730000	731100	731900	733000	734000	735000	735600	900	100	400
34	32	002025.SZ	93000000	723900	725100	723900	724000	725100	728000	728700	730000	731100	731900	733000	734000	735000	735600	900	100	400
35	33	002048.SZ	93000000	167500	167500	166600	166600	167400	167500	167600	167800	167900	168000	168100	168200	168300	168400	4300	16400	200

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2. Data Source

Table 1 Tickdata File Data Field Description

Serial Number	Field Name	Field Description	Serial Number	Field Name	Field Description
1	COLUMN01	Index	**29**	COLUMN29	Buying Price 2
2	COLUMN02	Stock code	**30**	COLUMN30	Buying Price 3
3	COLUMN03	Tick time (accurate to milliseconds)	**31**	COLUMN31	Buying Price 4
4	COLUMN04	Opening price of the day	**32**	COLUMN32	Buying Price 5
5	COLUMN05	Highest price of the day as of the tick	**33**	COLUMN33	Buying Price 6
6	COLUMN06	Lowest price of the day as of the tick	**34**	COLUMN34	Buying Price 7
7	COLUMN07	Latest transaction price of the tick	**35**	COLUMN35	Buying Price 8
8	COLUMN08	Selling Price 1	**36**	COLUMN36	Buying Price 9
9	COLUMN09	Selling Price 2	**37**	COLUMN37	Buying Price 10
10	COLUMN10	Selling Price 3	**38**	COLUMN38	Buying Volume 1
11	COLUMN11	Selling Price 4	**39**	COLUMN39	Buying Volume 2
12	COLUMN12	Selling Price 5	**40**	COLUMN40	Buying Volume 3
13	COLUMN13	Selling Price 6	**41**	COLUMN41	Buying Volume 4
14	COLUMN14	Selling Price 7	**42**	COLUMN42	Buying Volume 5
15	COLUMN15	Selling Price 8	**43**	COLUMN43	Buying Volume 6
16	COLUMN16	Selling Price 9	**44**	COLUMN44	Buying Volume 7
17	COLUMN17	Selling Price 10	**45**	COLUMN45	Buying Volume 8
18	COLUMN18	Selling Volume 1	**46**	COLUMN46	Buying Volume 9
19	COLUMN19	Selling Volume 2	**47**	COLUMN47	Buying Volume 10
20	COLUMN20	Selling Volume 3	**48**	COLUMN48	Accumulated transaction volume to the tick on the day
21	COLUMN21	Selling Volume 4	**49**	COLUMN49	Accumulated transaction amount to the tick on the day
22	COLUMN22	Selling Volume 5	**50**	COLUMN50	Total commissioned buying volume of the tick
23	COLUMN23	Selling Volume 6	**51**	COLUMN51	Total commissioned selling volume of the tick
24	COLUMN24	Selling Volume 7	**52**	COLUMN52	Limit-up price of the day
25	COLUMN25	Selling Volume 8	**53**	COLUMN53	Limit-down price of the day
26	COLUMN26	Selling Volume 9	**54**	COLUMN54	Weighted average commissioned buying price of the tick
27	COLUMN27	Selling Volume 10	**55**	COLUMN55	Weighted average commissioned selling price of the tick
28	COLUMN28	Buying Price 1			

2. Data Source

Demo trading programs:

- provides two simple strategies for showing the interfaces for reading files and generating results.
- contestants can compose their own trading programs by referring to the format of the demo programs.

Shared Folder NUS-BAC-competition2023 › demos › **demo1**

The share expires at:07/16/2023 09:31:42 GMT+08:00

Enter an object name prefix.

Name	Storage Class	Size	Last Modified	Operation
Back				
run.sh	Standard	193 byte	02/02/2023 14:50:04 GMT+08:00	Download Download As
readme.txt	Standard	381 byte	02/02/2023 14:50:04 GMT+08:00	Download Download As
myModel_demo.py	Standard	1.89 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As

Shared Folder NUS-BAC-competition2023 › demos › **demo2**

The share expires at:07/16/2023 09:31:42 GMT+08:00

Enter an object name prefix.

Name	Storage Class	Size	Last Modified	Operation
Back				
trainData.csv	Standard	63.94 MB	02/02/2023 14:50:04 GMT+08:00	Download Download As
trainModel.py	Standard	321 byte	02/02/2023 14:50:04 GMT+08:00	Download Download As
tick2trainData.py	Standard	2.93 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As
run.sh	Standard	193 byte	02/02/2023 14:50:04 GMT+08:00	Download Download As
readme.txt	Standard	1.05 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As
myModel_demo.py	Standard	4.36 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As
model.pkl	Standard	592.04 KB	02/02/2023 14:50:04 GMT+08:00	Download Download As

2. Data Source

Contestants can obtain the resources in two ways:

1) Huawei Cloud OBS sharing link: <Click here> (get *Extraction Code* from registered email)

2) Huawei Cloud Server (Competition Server)

- The organizer provided a Linux server and established separate accounts for each participating team.
- After registration, the contestant will receive an email, including the user name and password for accessing the competition server.
- Please change the initial password in time and keep it safe to avoid password leakage.
- The server supports SSH and SFTP access.
- Data required for the competition is stored in ***/opt/tickdata*** and ***/opt/demos***, the content is the same as the OBS sharing link.

3. Transaction Programs Submission

- Contestant logs in to the competition server and directly deploys your programs in the $HOME directory of the account. Other submission methods are not supported.

```
(base) [user001@ecs-0001 ~]$ ls
readme.txt  run.sh
```

Access by SSH (e.g. Termius)

Access by SFTP (e.g. FileZilla)

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3. Transaction Programs Submission

- A *run.sh* script file must exist in the $HOME directory, the content of the script file to be filled by the contestants.
- The organizer runs the submitted program through a unified command *sh run.sh $input $output*.

  -$input: Absolute path of a market data file *(for example: /opt/tickdata/tickdata_20220805.csv).*

  -$output: Absolute path for saving the transaction order time file *(for example: /home/userXXX/ordertime_20220805.csv).*

  Refer to Table 2 for the Ordertime File Data Field Description.

Table 2 Ordertime File Data Field Description

Serial Number	Field Name	Field Description
1	symbol	Stock code
2	BSflag	Buying or Selling Instruction (’B’: Buy In，’S’: Sell Out)
3	dataIdx	Index field that the current instruction corresponding to the line of tickdata file (The value of COLUMN01)
4	volume	The stock order volume of current transaction

3. Transaction Programs Submission

- A readme.txt file must exist in the $HOME directory, which is used to describe the precautions for running the program.
- Ensure your program meet the competition interface requirements to be qualified in the ranking in the next phase.

For example, run the following commands successfully:

```
#sh run.sh /opt/tickdata/tickdata_20220805.csv /home/userXXX/ordertime_20220805.csv
```

Then a ordertime file should be generated, and run the evaluation.py:

```
#python evaluation.py /opt/tickdata/tickdata_20220805.csv /home/userXXX/ordertime_20220805.csv
#Earning rate is: 5.87 bp
```

Then a earning rate should be printed on the terminal.

Notice: The market data file is large, do not copy the market data in ***/opt/tickdata/*** to your $HOME directory. If you need to access the data, read the data directly.

4. Task Detail Description

About Data：

(1) The data is sorted based on the tick time (COLUMN03). At the same time, rows with null values are removed to ensure that all data is valid.

(2) Generally, *tickdata* record is generated for each stock every three seconds on average. However, the number of records of each stock in a day is not consistent due to the different activity levels of each stock or the limit-up and limit-down of each stock.

Usually, the number of daily records of each stock will be in the range of 2800-4800.

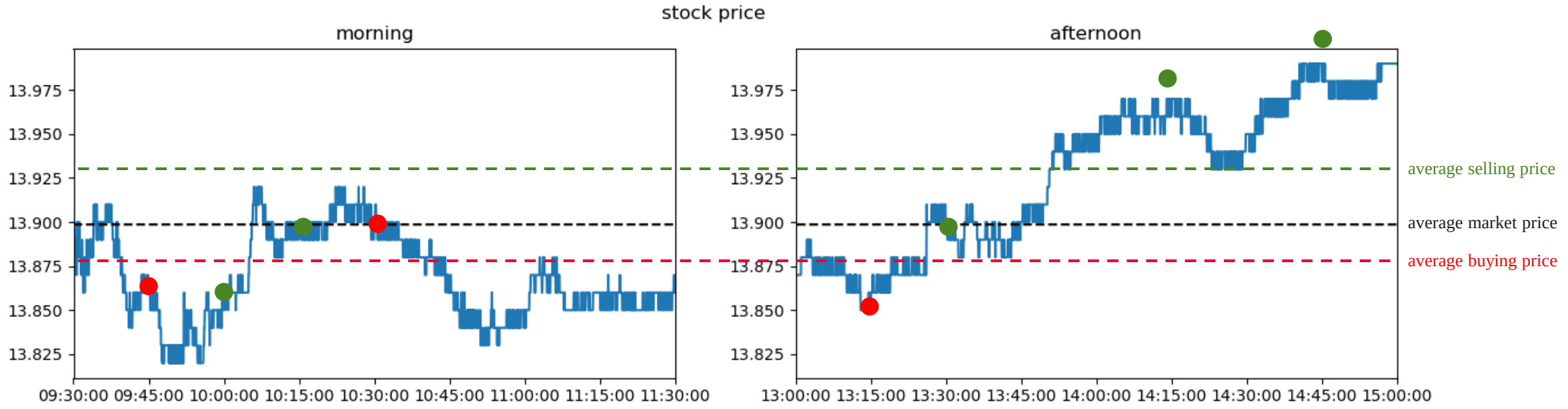
filter: COLUMN02 == 000012.SZ

	A	B	C	D	E	F
1	COLUMN01	COLUMN02	COLUMN03	COLUMN04	COLUMN05	COLUMN06
2	491	000012.SZ	93000000	65700	65800	65600
3	1079	000012.SZ	93003000	65700	65900	65600
4	1605	000012.SZ	93006000	65700	65900	65600
5	2125	000012.SZ	93009000	65700	65900	65600
6	2578	000012.SZ	93012000	65700	65900	65600
7	3099	000012.SZ	93015000	65700	65900	65500
8	3655	000012.SZ	93018000	65700	65900	65200
9	4159	000012.SZ	93021000	65700	65900	65200
10	4649	000012.SZ	93024000	65700	65900	65100
11	5139	000012.SZ	93027000	65700	65900	65100
12	5650	000012.SZ	93030000	65700	65900	65100
13	6116	000012.SZ	93033000	65700	65900	65100
14	6556	000012.SZ	93036000	65700	65900	65100
15	7047	000012.SZ	93039000	65700	65900	65000
16	7547	000012.SZ	93042000	65700	65900	65000
17	8045	000012.SZ	93045000	65700	65900	65000
18	8540	000012.SZ	93048000	65700	65900	65000
19	9036	000012.SZ	93051000	65700	65900	65000
20	9534	000012.SZ	93054000	65700	65900	65000
4726	2225760	000012.SZ	145727000	65700	65900	63000
4727	2226603	000012.SZ	145736000	65700	65900	63000
4728	2227504	000012.SZ	145745000	65700	65900	63000
4729	2228378	000012.SZ	145754000	65700	65900	63000
4730	2229268	000012.SZ	145803000	65700	65900	63000
4731	2230131	000012.SZ	145812000	65700	65900	63000
4732	2231006	000012.SZ	145821000	65700	65900	63000
4733	2231881	000012.SZ	145830000	65700	65900	63000
4734	2232850	000012.SZ	145839000	65700	65900	63000
4735	2233679	000012.SZ	145848000	65700	65900	63000
4736	2234535	000012.SZ	145857000	65700	65900	63000
4737	2235392	000012.SZ	145906000	65700	65900	63000
4738	2236301	000012.SZ	145915000	65700	65900	63000
4739	2237163	000012.SZ	145924000	65700	65900	63000
4740	2238024	000012.SZ	145933000	65700	65900	63000
4741	2238982	000012.SZ	145942000	65700	65900	63000
4742	2239906	000012.SZ	145951000	65700	65900	63000

4. Task Detail Description

About Task：

(1) Each stock in the pool picks K appropriate time points to trade every day. The K of each stock can be different, but it is necessary to ensure that K is not less than 3.



- Buy: 9:45:00 –> 20 10:30:00 –> 20 13:15:00 –> 60
- Sell: 10:00:00 –> 10 10:15:00 –> 10 13:30:00 –> 20 14:15:00 –> 20 14:45:00 –> 40

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4. Task Detail Description

(2) The volume of each transaction can be distributed freely, but the minimum volume of each transaction must be at least 1, and the total volume of K transactions must be exactly equal to 100.

(3) To facilitate revenue statistics, the transaction time selected by the contestant must be the existing time in the tickdata file, and the index number of the time in the file must be provided (the value of COLUMN01 in the line where the time is located).

(4) The interval between two consecutive transactions should be no less than 1 minute.

(5) Only the data from the opening of the current day to the current time can be used for the generation of trading signals. Historical data before the current day and future data that is not traded on the current day cannot be used.

The organizer will check the model source code to ensure that the data is used reasonably.

4. Task Detail Description

About Transaction Programs Submission：

(1) The competition does not limit the programming language used in the work program, but specified the running interface of the program.

The organizer will run the program submitted by the contestant through the unified command:

```
sh run.sh $input $output
```

Contestants should deploy the relevant environment and fill in the run.sh script to ensure that the program can run properly.

$input: the absolute path of an original market data file

(for example, /opt/tickdata/tickdata_20220805.csv).

$output: the absolute path for saving the delegate time point list file

(for example, /home/userXXX/ordertime_20220805.csv).

4. Task Detail Description

(2) The organizer provides a simple strategy sample in the ***/opt/demos*** path of the competition server. Participants can write their own programs by referring to the example.

(3) The organizer can use evaluation.py to calculate the yield of the *ordertime* file:

```
python evaluation.py $tickdata $ordertime
```

(similar to the *sh run.sh* command)

$tickdata: the absolute path of an original market data file

(for example, /opt/tickdata/tickdata_20220805.csv).

$ordertime: the absolute path of the yield time point list file

(for example, /home/userXXX/ordertime_20220805.csv).

This function will return a value (earning rate) to assess the effectiveness of the strategy.

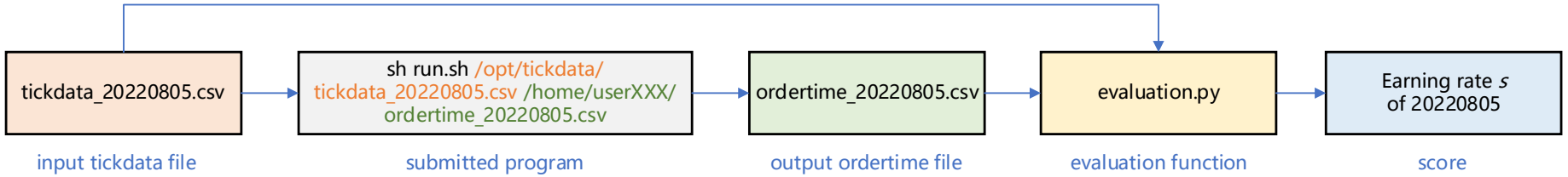
Contestants can also evaluate the effectiveness of their programs based on the calculation function.

4. Task Detail Description

(4) The transaction program should be independent, that is, the $HOME directory of the contestant's user account should contain all the resources required for the program to run, including specific software, third-party libraries, and external data files. The program requires a third-party library or file dependency, it can be installed in the $HOME directory of the contestant’s user account to ensure the reliability of the program. The organizer had deployed the necessary environment in advance. The transaction program should minimize the dependence on the root permission. If the root permission is required for installation, contact the organizer personnel.

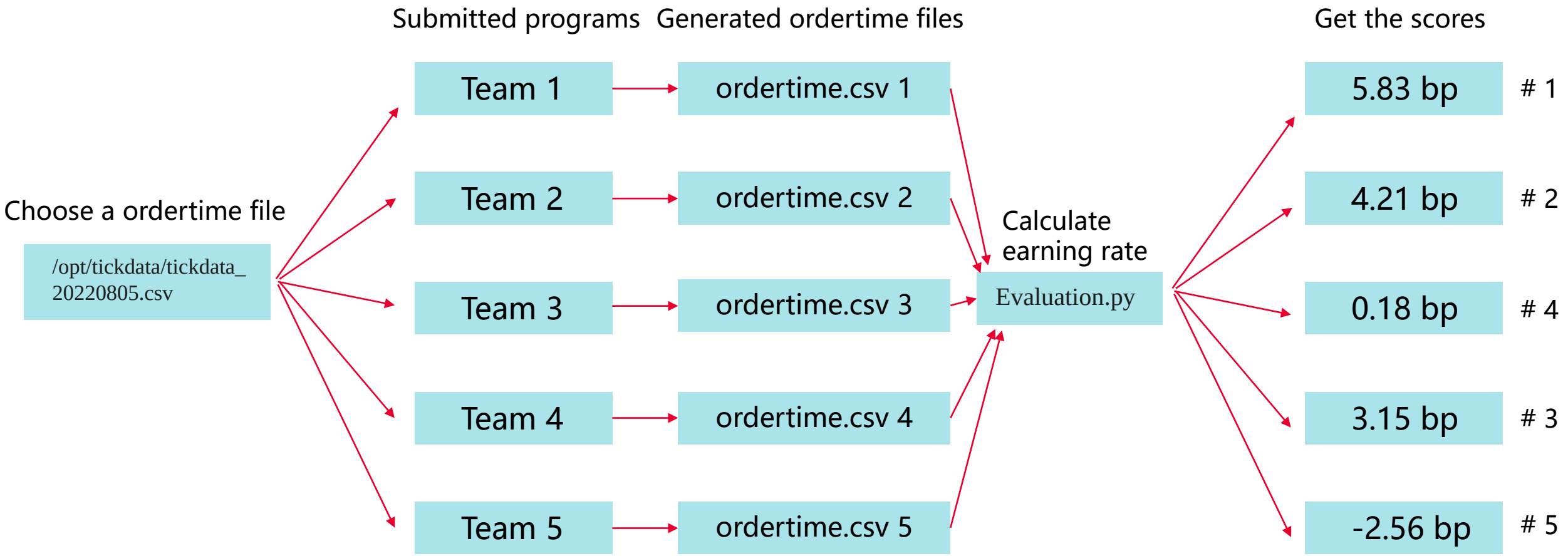
5. Ranking Evaluation Criteria

- The following figure shows the process of evaluating the contestants' work by the organizer.



- The organizer will calculate the score of the contestant's program on a daily basis. First, specify the *tickdata* file for a certain day by changing the $input parameter, and specify the path to $output. Then, run run.sh to obtain the *ordertime* file. Finally, use evaluation.py to calculate the yield s of the day as the score of the day. The higher the yield, the more effective the delegation time point selected by the current program.

5. Ranking Evaluation Criteria



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5. Ranking Evaluation Criteria

Round One			Final Round	
before March 05	March 06 - March 24	March 27 - March 31	April 10 - April 21	April 24 - April 28
Test run	**Pre-ranking**	**Closed-door run**	**Pre-ranking**	**Closed-door run**
•Code testing and debugging •Access to the competition server at any time	•Program submission •The competition server suspended from 8:00 to 18:00 every day •The rankings will be announced before 8:00 the next day	Note: The last submission time for this phase is 8:00 on March 27	•Program submission •The competition server suspended from 8:00 to 18:00 every day •The rankings will be announced before 8:00 the next day	Note: The last submission time for this phase is 8:00 on April 24 Final event on April 29

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Competition Process Detail

Joe Liu

Chief of Huawei Developer Ecosystem

Huawei International

HUAWEI

Outline

1. Competition Process
2. Attention
3. Technical support

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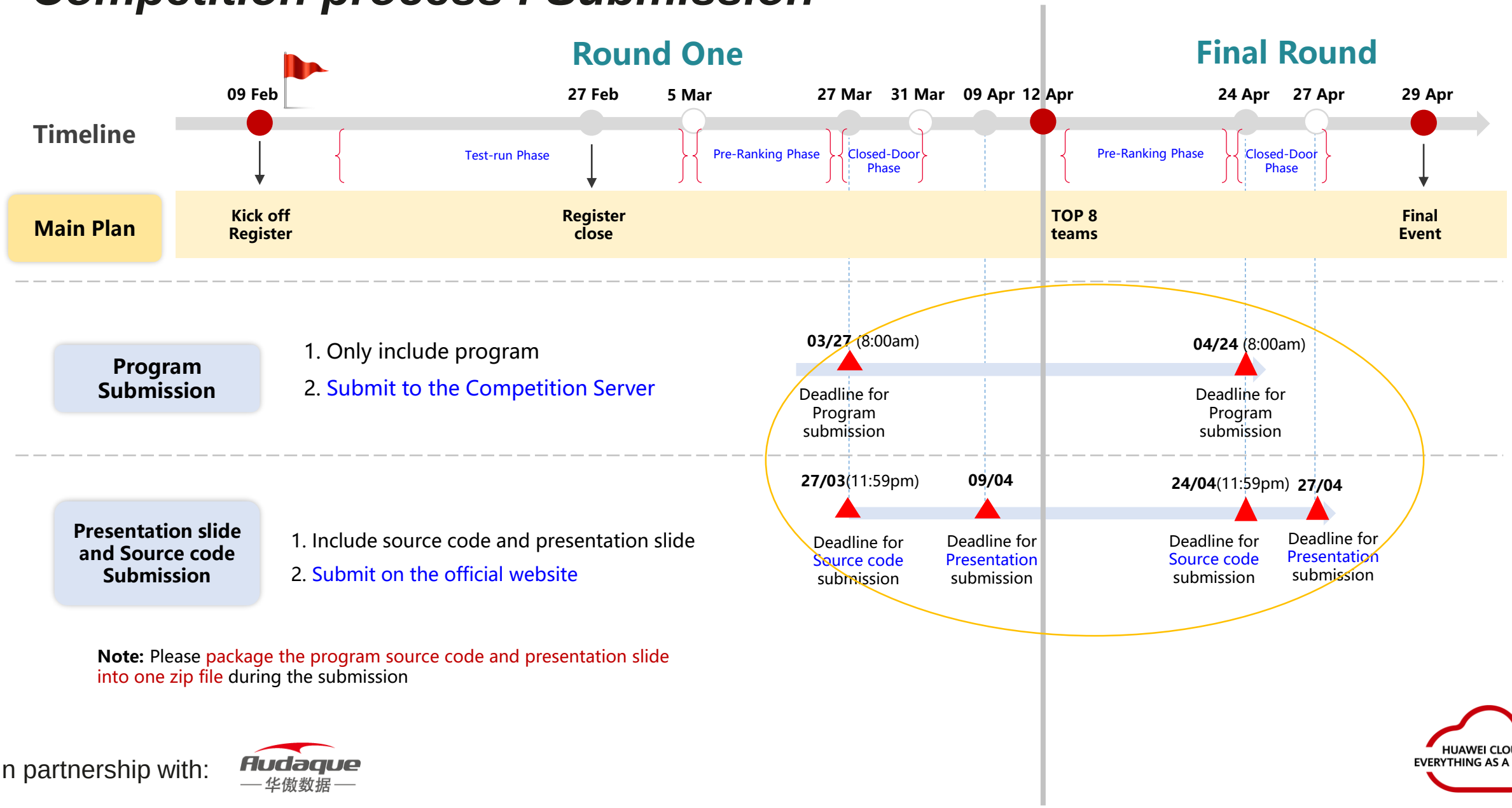
Competition process : Submission



Note: Please package the program source code and presentation slide into one zip file during the submission

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Competition process : Registration

Round One

Final Round

Timeline

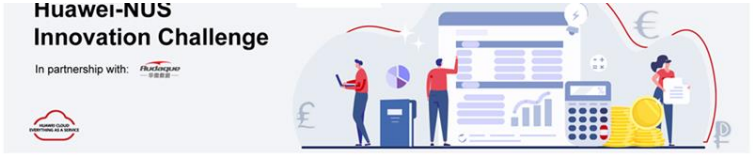
09 Feb — 27 Feb — 5 Mar — 27 Mar — 31 Mar — 09 Apr — 12 Apr — 24 Apr — 27 Apr — 29 Apr

Test-run Phase | Pre-Ranking Phase | Closed-Door Phase | Pre-Ranking Phase | Closed-Door Phase

Main Plan	Kick off Register	Register close	TOP 8 teams	Final Event

You will receive two registration emails

1



Dear Participant,

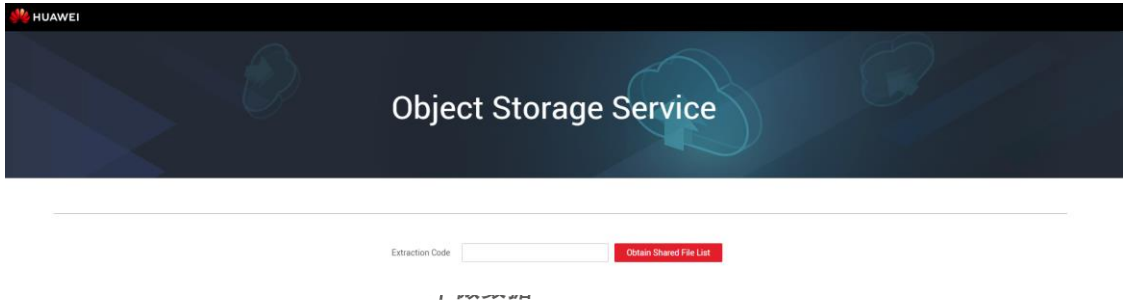
We have received your application for Huawei-NUS Innovation Challenge and it has been confirmed. Thank you for participating in the competition!

Please **take note** on the information below:

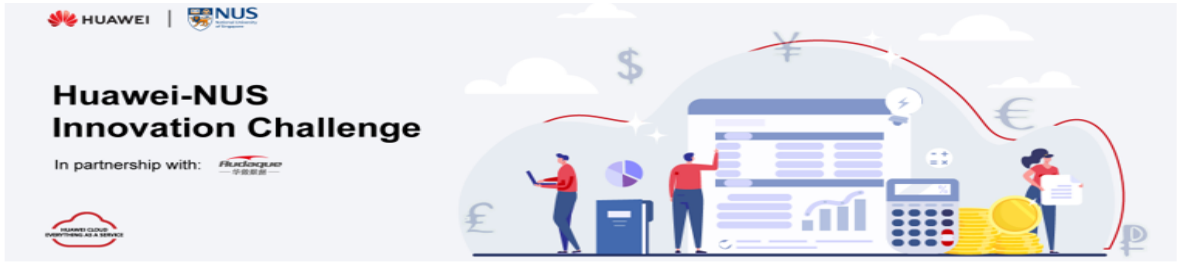
As explained in Problem Description, **2. Data Source**, the competition will provide relevant data required. Upon clicking the Huawei Cloud OBS sharing link, you may download the competition data using an *Extraction Code*, which is

[redacted]

*The information about your competition server account and Huawei Cloud resource voucher will be notified in the next email.



2



Dear Participant,

Thank you for participating in Huawei-NUS Innovation Challenge!

Please **take note** on the following information:

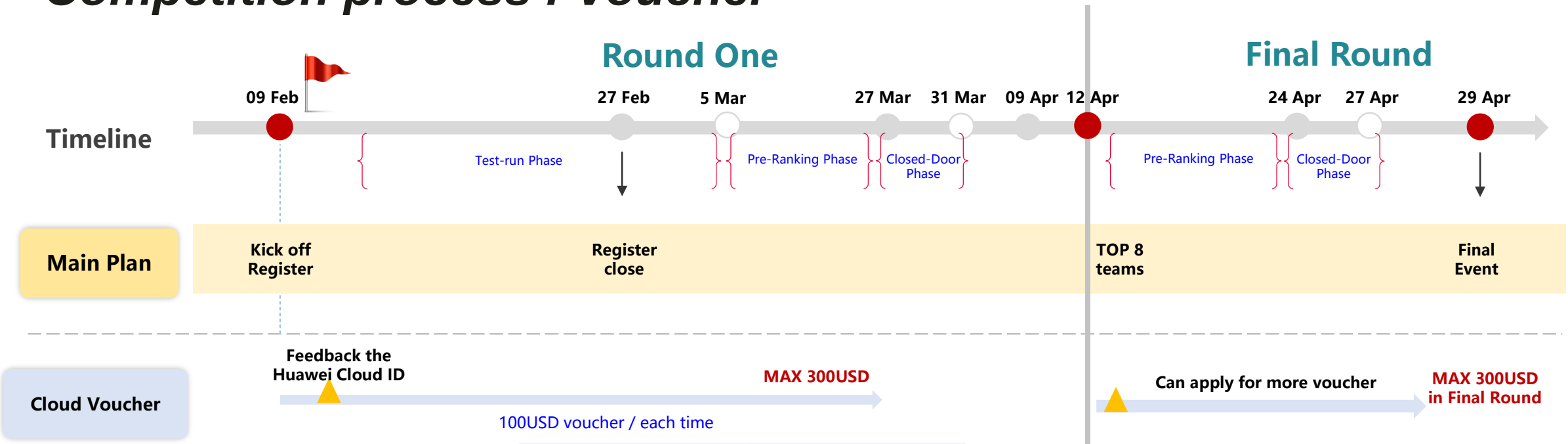
1. **Competition Server Account**
   Host IP: 18[redacted]16
   Username:
   Password:
   **Please change the initial password once received in time and keep it safe.*

2. **To claim Huawei Cloud Resource Voucher per team**
   i. Please register **here** if you do not have a Huawei Cloud account. **Only one registration is allowed per team.** You may also refer to the **attached PDF** for a detailed guide to register a Huawei Cloud ID and join Huawei Developer Forum for more information. If you encountered any problems in using Huawei Cloud, you may post your question in the Huawei Developer Forum and Huawei dedicated team will help to solve it!

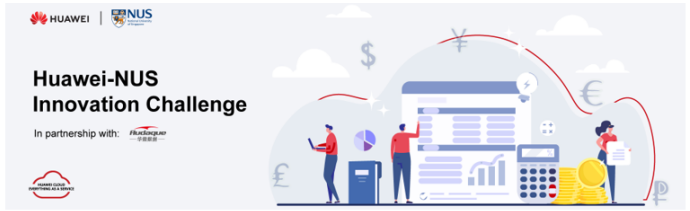
   ii. After registration, **email** your **Huawei Cloud ID** (can be found as pictured below) **to** the Organizing Committee of the competition email at msba@nus.edu.sg for voucher distribution recording purpose. Upon receiving your Huawei Cloud ID, Huawei will issue each team the first resource voucher **@USD100** to support resource expenses during the competition. When the first USD100 resource voucher is used up, the team may request for another USD100 resource voucher and the third resource voucher after that. There is a total of USD300 will be distributed to each team only. *No additional resource voucher will be distributed before final round, so please carefully evaluate the resources used in the competition.* If you did not receive the voucher within 5 working days from registration, please contact the Huawei at developer.cloudapac@huawei.com.

3. **To build competition programs and training model**

Competition process : Voucher



You will receive a voucher email



Dear [Participant name],

Thank you for your registration in Huawei-NUS Innovation Challenge!

Here's your coupon code to redeem USD100 of Huawei Cloud Resource Voucher:

16 digit and numbers code

The USD100 of Huawei Cloud credits is dedicated for you to support resource expenses during the competition on Huawei Cloud. Kindly note the validity period of the cloud credits is 3 months.

Please follow the attached PDF "Huawei Cloud Credits Redemption Guideline" to redeem the Huawei Cloud Resource Voucher in your Huawei Cloud account.

If you have any questions about Huawei Cloud, you may click here to post your questions on our developer forum. We have a dedicated team there to help you!

Thank you and all the best!

Best regards,
HUAWEI CLOUD APAC Team

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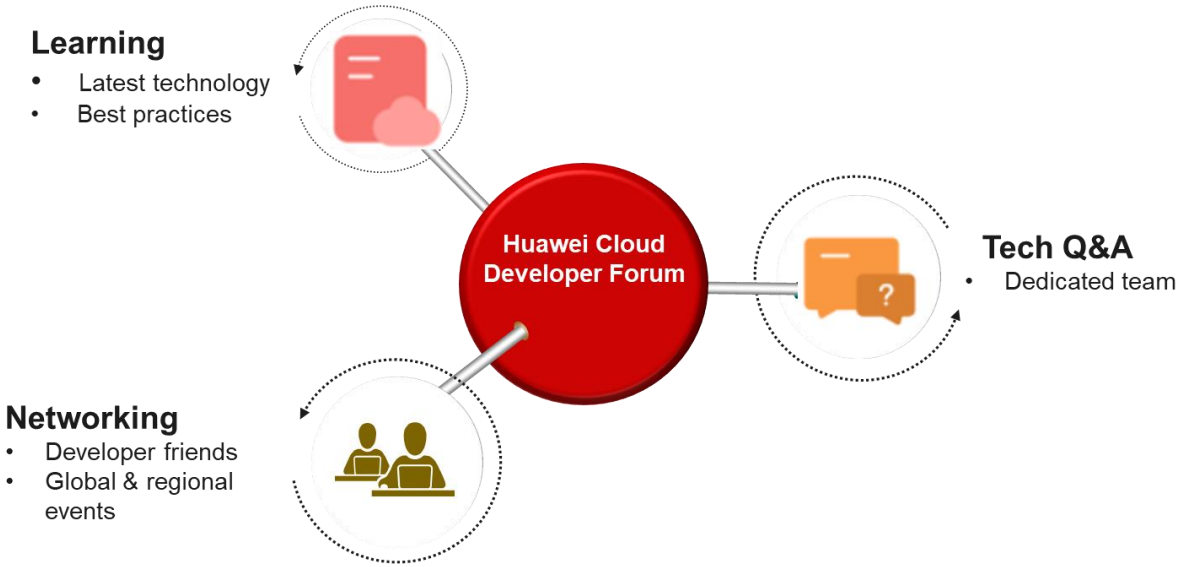
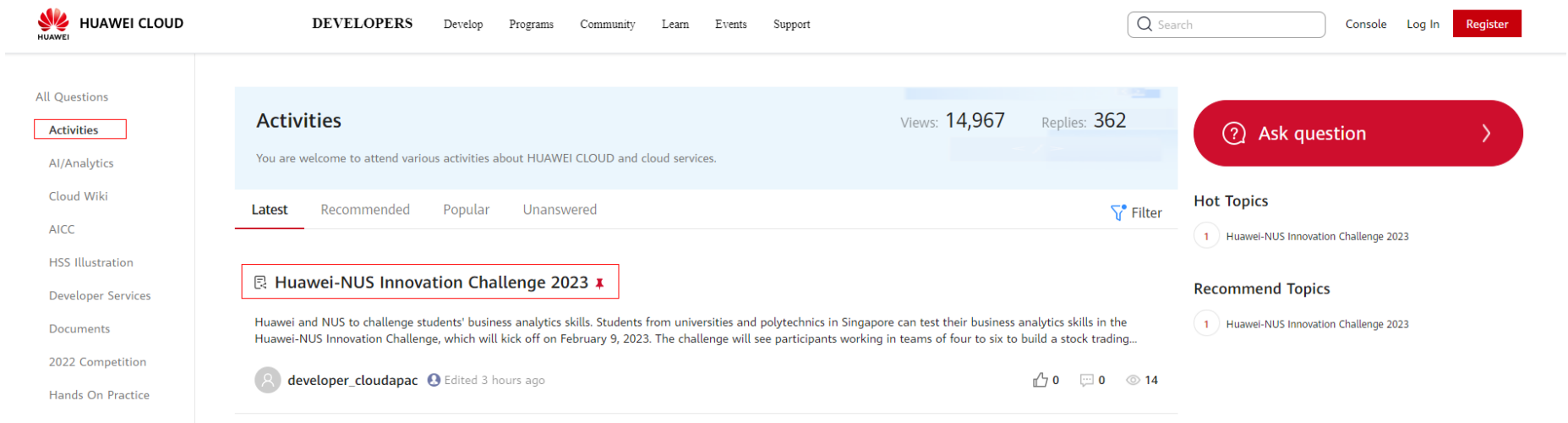
Attention for Using Huawei Cloud services

1) Please select the Singapore region to purchase resource.
2) To save the consumption of resource vouchers:
    a) Suggest using Low-Level CPU resources (2 cores and 8GB) for model and program code debugging. High-Level CPU resources (8 cores and 32GB) are used for model training and prediction. If you must use GPUs, please evaluate the duration of using GPUs based on the price of cloud service. We would not provide additional voucher for GPU mode.
    b) Suggest you to stop cloud service in time when they are not in use.
3) The competition server do not support GPU, if you must use GPU server, please contact with us.
    a) GPU Server will be open on some special day and special time(we have not made decision on the open time, need base on requirement), so your program must support CPU mode first.
4) At Last: Once your competition ends, must delete all cloud resources in time to prevent unnecessary cost.

Technical support for Using Huawei cloud services



https://developer.huaweicloud.com/intl/en-us/forum/



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Questions and Answers

Next Sessions

Date	Time	Agenda	Venue and Time	Zoom's Link
16 Feb 2023	18:30	Huawei - NUS Innovation Challenge 2023 - Enablement I	Lecture Theatre 19 (LT19) National University Of Singapore, 15 Computing Drive, Singapore 119077	https://nus-sg.zoom.us/j/85222677809?pwd=d1FFUHZpZEdhTGdZYmhSdHBBKzFmZz09
23 Feb 2023	18:30	Huawei - NUS Innovation Challenge 2023 - Enablement 2	Lecture Theatre 19 (LT19) National University Of Singapore, 15 Computing Drive, Singapore 119077	https://nus-sg.zoom.us/j/85605710131?pwd=aHIyY2JQU2NwWjBPdGxIQm5pZVRDUT09

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Thank you.

Scan QR code
to Register now!

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每个组织，构建万物互联的智能世界。

Bring digital to every person, home and organization for a fully connected, intelligent world.

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