

# The 14<sup>th</sup> NAPROCK International Programming Contest

## Competition Section

### *“All 60 Thousand in One”*

#### **Outline of Competition**

This competition will be based on “*Karuta*” card game (see [Wikipedia](#) for the details of *Karuta*) on computers. In a regular *Karuta* game, the cards are read out loud one at a time, but in this competition, multiple cards will be read at the same time. The competitors will have to identify the cards using this superposed audio data. The cards that will be used are “*Jomo Karuta*”<sup>1</sup>, original local *Karuta* for the Gunma Prefecture. There are 44 cards each of the picture cards and reading cards. There is a Japanese version and English version to it, and we are using both for this competition. **The detailed information on Jomo Karuta is attached to this document.**

Now, let’s put together the wisdom of all 60 thousand *KOSEN* students around Japan as well as foreign competitors to take the challenge!

#### **Terminology**

##### ***Picture Cards (Efuda)***

- There are 44 different cards. For the picture cards, we will use the conventional *Jomo Karuta*.

##### ***Reading Cards (Yomifuda)***

- For each picture card, there are two reading cards: one in Japanese and another in English.

##### ***Reading Data***

- This data is the audio data of the recording of the reading cards being read out.
- There will be one reader each for the Japanese and English versions.
- The audio data features are as follows: uncompressed linear PCM, quantization bit rate of 16 bits, monaural, sampling frequency of 48kHz and in WAV(RIFF) format.
- Reading data will be released in advance. We plan to release the data around mid-May.

##### ***Problem Data***

- This is an audio data with several reading data superposed.
- Problem data and reading data are in the same audio data format.
- Minimum of three and maximum of twenty reading data are superposed. The number of data being superposed will be announced before the match begins.
- The same picture card will each have only either the Japanese or the English reading data.
- When superposing the reading data, the data may be displaced or a part of the beginning and/or the end of data may be deleted.
- The length of the problem data will differ for each match.
- Displacement will occur in units of one sample (sampled value).
- The sounds will be superposed without changing the volume. Clipping may occur due to the number of bits used for quantization.
- One match consists of multiple numbers of problem data given one after another. Number of problem data in the match will be announced before the start of the match.
- Same reading data will not appear in more than one problem data within one match.

##### ***Divided Data***

- This data is the problem data divided into units of one sample (sampled value).
- Divided data and question data are in the same audio data format.
- Data will be divided into minimum of two and maximum of five data. We will announce into how many data the problem data will be divided into before the match.

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<sup>1</sup> Permission No. 03-05083.

- The divided data will be in different lengths, but will be at least 0.5 seconds long.
- Each divided data will be numbered according to the order they were in the question data.
- Competitors can specify the number of divided data to acquire, but are not allowed to specify which data to acquire. You can acquire only the data predetermined for the number of data you specified.
- You may add the number of divided data to acquire at any time within the answering time.
- Bonus coefficient will be given according to the number of divided data used. The lesser number of divided data, the greater the bonus coefficient will be. The bonus coefficient that will be given for the match will be announced before the start of the match.
- Samples of the problem data and divided data will be released in advance. We plan to release the data around mid-May.

### ***Pick***

- Selecting the picture card that matches with the reading data included in the problem data is called **“pick.”**
- You can pick the unselected cards as well as the cards picked for previous problems or changed cards.
- When an unselected card is picked for the first time, the card will be called **“picked card.”**
- You may not pick more cards than the number of reading data in the problem data.
- You may not pick the same card for more than one problem.

### ***Change***

- **“Change”** is when you change the card you picked for the previous problem or the card you previously changed, and that card is called the **“changed card.”**
- Changing will decrease the number of picked cards in the previous problem, but you may not add card(s) to supplement the decrease.
- Points will be deducted according to the number of changed cards. The points to deducted per card will be announced before the match starts.
- Points will not be deducted twice by changing a changed card again to a different card in another problem.

### ***Correct answers and fouls***

- When all the problems are finished, the picked cards and changed cards for the match will be fixed. Please be noted that not all 44 cards will necessarily be used at the end of the match.
- Both picked cards and changed cards matching the data in each problem data will be counted as the correct answer and these cards will be called the **“correct answer cards.”**
- Points will be given to the correct answer cards and these points multiplied by the bonus coefficient will be the **“correct answer point.”** The points given to each correct answer card will be announced before the match starts.
- Picking or changing to a card that is not included in the problem data is called **“foul”** and the card that you mistakenly picked or changed is called a **“foul card”** (*Otetsuki fuda*).
- Points will be deducted according to the number of foul cards. The points to deducted per card will be announced before the match starts.

### **How to Determine the Order of Winner**

Winner and loser of the match will be determined based on the following priority.

1. Total point (the team with the higher total point of correct answer points and deduction will be ranked higher)
2. Correct answer point (the team with higher total of correct answer points will be ranked higher)
3. Deduction for change (the team with higher deduction due to changing cards will be ranked higher)
4. Dice rolls (the team with higher sum of eyes of the dices will be ranked higher)

### **Time Limit**

- There will be a time limit for submitting the answer for each problem.
- The time limit is expected to be between two to ten minutes, but the actual time will be announced before the match starts.
- Transmission of the answer should be completed within the time limit. If the time runs up during the

transmission, that answer will be considered invalid.

### **Submission of the Answers**

- We plan to have the answers transmitted through each team's PC connected via wired LAN.
- Other additional information such as the answer format and protocols will be released in the beginning of June.

### **Providing Software for the Competition**

- We are planning on providing a simplified software and its source for submission of the answers at the end of June.
- We will post any additional information for the above software on "Competition" channel at "00\_NAPROCK\_PROCON" team in MS Teams.

### **Additional Rules and Notes**

- You may use up to three portable and programmable devices for the competition. At least one of the devices should be used for sending the answers, and should be equipped with RJ45 wired LAN port for 10BASE-T /100BASE-TX/1000BASE-T and be connectable by TCP/IP.
- During the competition, you are not allowed to exchange information with any parties other than the team members. Also, no communication with devices other than those used in the competition are allowed.
- You must not disrupt or distract the server or other teams during the match. Any prohibited act done in intention of disrupting the progress of the competition or disturbing the judges or other teams, may result in disqualification.
- Submitting an unnecessarily long answer may be regarded as a malicious intent to disrupt the conduct of the competition.
- If any system trouble occurs at the organizer's side concerning the distribution of the problems and collection of the answers, we may use other off-line methods such as USB flash memory stick for the distribution and collection. In this case, the duration of each match and number of submissions of reply may change. In the case of online competition, other methods will be applied (the detailed information will be released in this case).
- When any trouble occurs in the organizer's side, the competition may be reconducted with different problems.
- Depending on the booth layout, other teams may be able to see your computer screen. (This will not occur in the online competition.)
- During the competition, the players and the desks (including computer screen, operation status, memo on the desk, etc.) may be recorded using video camera, and may be displayed at the same time on the screen, etc. in the venue. In the case of online competition, the shared screen may be recorded and broadcast on the web.
- During the competition, the judges may observe the players and the desks (including computer screen, operation status, memo on the desk, etc.) for judgement.
- The data used during the competition and the data each team sends to the server may be released on the website after the competition.

### **Inquiries**

If you have any inquiries, please send the message to "QandA" channel at "00\_NAPROCK\_PROCON" team in MS Teams. The replies to the inquiries given will be shared with other foreign competitors. Even ideas that may affect the result of the match will be shared equally.

Teachers as well as student members registered at MS Teams can post inquiries on Teams.