

## **1. Introduction**

The DITS(Dice Information Transport Suit) is based on python and java. Sender uses encoding scheme selecting algorithm of character two-dimensional barcode to encode the text from contest. Receiver handles the image by the way used in NAPROCK 2012, reverses the aforementioned method and submits the answer to server. Both sender and receiver use encryption dictionary and random shifting.

## **2. Preparation of Manuscripts**

### **2.1 Sender's side**

The sender's side client in DITS is mainly built by java. With the encoding scheme selecting algorithm of character two-dimensional barcode, source texts are encoded by 5 ways: capital mode, lower-case mode, number & punctuation mode,

number mode and full mode. Each pattern contains its corresponding character from the official sheet. There are M characters(M depends on pattern) in each group. Program translates the code into senary according to the encryption dictionary and a random number to shift, the number is ensured before the competition.

### **2.2 Receiver's side**

The receiver's side client is built by java and python. Firstly, the client(see the 2.3 part) processes the image from server and export the senary number. Then the decoding module translates them into decimal numbers and texts finally. The whole course is the reverse of sender's side.

### **2.3 Image Processing**

Like NAPROCK 2012, the program extracts dice's red dot as feature points and recognizes other black dots as data.