PLT TEAM 13 IDEAS

1. A language to write HTML web page (jHtml)

User: The programmers do not know the Logic of HTML Tags
Domain: Programming web page

Some programmer may face to the problem on understanding the logic of HTML Tags and their attributes. Instead, they are familiar with the programming in Java.

Some examples programmer want to implement in HTML are listed:

1. Put multiple images on the page at different position of the page.
2. Draw a table with red border on the page and fill the content into the table.
3. List lines of text on the page, insert the hyperlink if the lines of text contain some key words.

In addition, we can handle Javascript section for computation logic:

1. A web page based calculator
2. A web page based currency converter

Thus, for programmers, he will handle two sections of codes respectively. Firstly, our parser will translate the second section to HTML codes and translate the first section to Javascript and Embedded it into HTML codes.

2. Card(poker) Game

User: Game programmers
Domain: Card(poker) Game Development

Problem to Solve: Define a particular language for card game designing. It my be difficult for a Game Programmer to design a general class of card games. In our language, we will define some particular data types and functions, which could greatly simplify the design for this class of games.

Property of our language: Simple and easy for programmer to design a card game

We have already designed our language initially. The details are as follows:
Data types:
1. Card<suit,value>:Card<1~4,1~13> it is just like a map in JAVA language. There are two properties for this data type, including suit and its corresponding value.
For suit, there are four different suites, it will be represented by a integer from 1 to 4. For values,

the range is 1 to 13.
2. isFlipped:true/false it is a property to identify whether this card has been flipped or not.
3. direction: clockwise/anticlockwise it is used to decide the order to pass the card
4. player<name, id>
5. score: This data type will be used to record the score for each player
6. Deck: 52-54 holding all the cards
Functions:
1.draw(): draw cards from deck
2.deal():get cards from the system
3.sum(): sum the values of the cards
4.subtract():subtract the values of the cards
5.compare():compare cards

Summary: We just describe some basic data types and functions which maybe used in our language. In the progress of implementation, we may try to design more basic data types and internal functions so that the card game developers can design all kinds of card games easily.

3. Video Editing

Another idea is that designing a language for editing (not processing) videos. This language mainly addresses offline edit of recorded videos as well as online edit of streaming video.

The potential users are 1) massive amount of people like youtube users who produce videos themselves and would like to have flexible ways to edit them before sharing or storing and 2) people who monitor streaming videos and want to have the video been modified on the fly to get effect which is not presented in raw streaming video.

This language allows people to manipulate the video by way of zooming in/out, speeding up, slowing down, rotating, position shifting, frame reordering and color changing by programming. More importantly, it provides mechanisms to let video parameters interact and influence each other. For example, the color change of the objects in the video can change the position and size of the video. Or the speed the video plays can change according to how fast the objects in the video move. Finally, this language also let user to edit and combine multiple videos together.

Comparing with general purpose language, this language has at least two consideration to make it convenient for video editing. The first convenience is the so-called “fake object”. For a video, the fundamental objects are the frames. However, the frame is usually too much detailed for the user since in most cases when the users want to modify the video, they want to apply the modification to a period of video instead of just a single frame. Keeping this in mind, this language takes frame array as basic object and hide the iterative operation from the users. This is kind of like in lisp - the language takes everything as a list. The second consideration is that things happen while video plays. And the users may want to respond to the events frequently. So this language will also provide very convenient facilities for event driven programming.

Sample use cases:

Consider the situation that many video cams are monitoring a large building. All these videos are presented on a screen in the building control room. Since there are too many cams relative to the size of the screen, the screen looks very crowd and neither video is large enough for people to see the details. However, most of the time, nothing happens in most of the cam views and what people really want to pay attention to are the several cam views in which something interesting is happening. With this language, people can write programs to dynamically make these interesting cam views appears much larger than the cam views that don't change at all.

Another case is that two cams record the two directions of a cross section. People may think at a given moment, the direction of green light is more interesting than the other one. To save space, people may want to combine all the moments that each cam was recording while the green light on into one video file. Considering the thousands times of green/red light switch, it is not feasible for a person to do manually. However, this can be easily done by writing a program in proposed language.