Comic Pang! Pang!
Jumunjin

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Abstract—**This paper is a proposal of the software developing project. It contains description of the software we designed, researches on some related software, and requirements for our software.**

The 'Comic Pang! Pang!' is an educational program which focused on making comics. We found an idea from the demands that people want to make their own comics even if they don't have outstanding drawing skills. As web-based comics have been occupying the comics market, the software that provides tools to make comics will be required. Also, we found the idea of our software from 'coloring exercises books' which are steadily popular among children and their parents since for several decades. Therefore, we select the main user of the software as kids.

With our program, kids can make their own comics with given templates. We asked requirements from parents and kids to reflect real users' points of view.

TABLE I. ROLES OF TEAM MEMBERS

Table Column Head		
Roles	*Name*	*Task description and etc.*
User	Eugene Shin	Considers the requirements as the user/customer
Customer	Eugene Shin	Considers the requiements as the user/customer
Software developer	Sangmoon Lee	Realizes the requirements with actual software
Development manager	Hyunju Hwang	Embodies and arrange the requirements and transfer them to developer

I. INTRODUCTION

Nowadays, people, especially kids, don't read books that much. Instead the comic books market has been extending its field steadily. Now the comic book is not only for fun but it is also for education. As kids don't try to read books, educational point of comic books are shedding new lights.

There was a new sensation in the comics market. It was 'Web-Toon' service. 'Web-Toon' is a combination of two words 'web' and 'cartoon'. With web-toon, people are now able to enjoy comics everywhere, for free, with portable device. The new attempts with web-toon, such as small animation and interaction function, differentiates web-toon with original book-based comics.

As this format of comics are getting popular, more and more people wants to describe their daily life or creative story with comics as diary. However, most people don't try that due to their poor drawing skills.

We found a hint with this problem. At first we thought a program that provides templates of comics and people can fill it with their own story. After few meeting, we found that there was new type of comic book which has vacant speech bubbles on it. This type of comic book has caught popularity among kids and their parents.

Furthermore, 'coloring books' have steadily sold among parents for educational purposes. The coloring book is the book which has sketched-only pictures on it. Kids can paint the pictures as they like. The reason of coloring books' popularity is that kids, who don't have drawing skills, still want to draw some nice pictures. (Don't they look similar with people who wants to make comics but don't have good drawing skills?) Also, coloring books are good at concentration and emotional development.

For those reasons, we set the expected user as kids. With our software, kids will be able to make their own story with already

given templates. They fill the blanks with their own words and complete the story. Not only that but they also can change some given items that appear on the scenes. In other words, they can change daily life comics template-which will be given originally-to fairy tale or hero comics. Kids also can change the order of scenes.

We expect that kids will develop their potential creativity through creating their own story. Also, they can build circumstances judgements by ordering the scenes and change some given items that appear on the scenes. As users will be able to share their works with others, they will make laughs or feel sympathy with others works. They also can share their ideas with other kids.

II. RELATED SOFTWARE

A. Kid Pix Studio

Fig. 1. *User Interface of Kid Pix Studio*

'Kid Pix Studio' is an educational software for preschool kids made by Brotherbund. It received few prizes such as masterpiece software prize at Family PC and A+ grade at Parenting Magazine. It provides tools to create animations. Kids can make animations by combining video, effects, pictures and music. Those works will stimulate kids' interest and develop creativity. The software consists of 6 parts.

- Kid Pix :
  Kids can do computer graphics. This part provides painting, drawing, stamps and special effects.

- Surprising TV :
  This function provides about 100 movies. Kids can attach those movies to their works.

- Wriggle Pictures :
  Kids can make animations on their own with this function. The tools are similar with 'Kid Pix', but this function deals with moving pictures. Kids can also insert sounds and background pictures.

- Dancing Stamps :
  Kids can choose what they want among over 800 stamps. Those stamps also move as pictures.

- Puppet dolls :
  Kids will select one among 10 dolls and control it with numbers, words or arrows.

- Slide show :
  This function provides multimedia show with sounds, special effects and images. This can be performed very easily by inserting works on truck on the screen.

B. Olie's storybook making

Fig. 2. *Sample screen of Ole's storybook making*
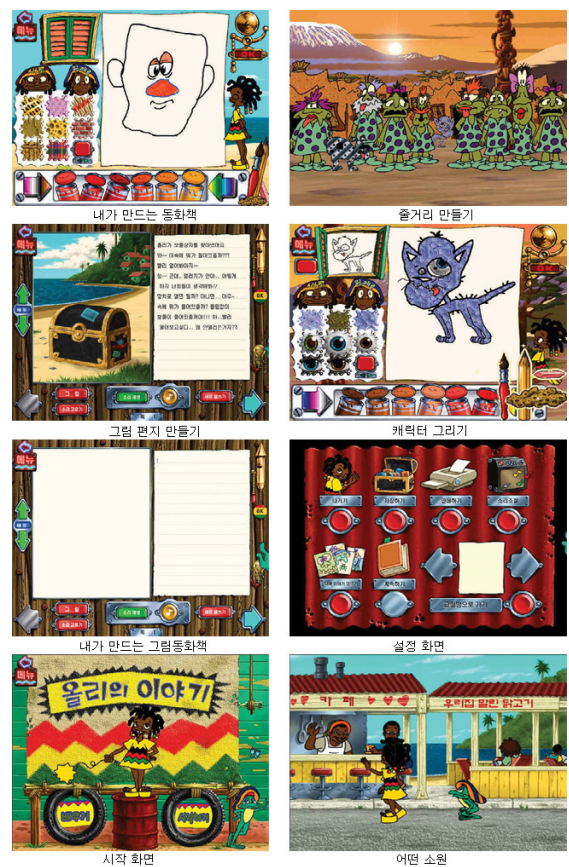
'Olie's storybook making' is an educational software for kids. It also made by same company, Brotherbund with 'Kid Pix Studio'. It was nominated as the most outstanding software for electronic book.

Kids can create pictures and stories freely. The works made by kids can be printed as book or played at outdoor screen. This clear and definite outputs will stimulate motivations. The software also provides tutorials to explain tools, functions and methods.

III. Requirements

A. Seleting Window

For both original users and first-visiting users, we will show a small pop-up window to sign in. For the latters, the web site provides tutorial. For the original users, we provide a pop-up window again. They can select what to do among tutorial, new project, and gallery-which contains self-works and other's works.

B. Slide Show

The program should not end with just creating comics. It must provide the slide shows of users' complete works. When the users finish their works, we make them as slide show and save it to gallery. They can read their own comics as same as web-toon.

C. The self-selecting tool

This function provides the selection of item in cartoon scenes. The users can input speech bubble or items like stickers. They can drag and drop them on templates freely. Items are small pictures of food, drink and clothes etc. Speech bubbles are also provided in forms of different types. We will make one inventory with two button. One button is for items and another is for speech bubble.

For example:

Suppose there is one scene that a character is holding

a broom. When the user pick the item, a new window

will pop up. The window will contain list of available items such as a sword, bag, magic stick and so on… If there aren't item the user want, they can draw their own.

- The special item which is available with this function must be distinguished. There may be a special mark on it.
- The drawing window will pop up when the user click 'question mark' in list.

D. The sharing function

The users may want to share it with other users or look around others' works. Therefore, the program will contain the 'Gallery' which is a little board filled with comics made by users. The users may share their ideas by upload their work and enjoy others' works. This function will act like little web-toon community. The program counts how many hits each works gained and locates the works by rankings of hits. This function will encourage users to make more and more creative works.

E. Tutorial

As the program is for children, they may not be familiar with computer programs. Therefore, the program should start with tutorial so that kids are able to learn how to use it. Tutorial must contain

- how to start new comics project
- what is in menu tab
- the process of activity with sample comics project
- how to save comics project

F. Text-editng function

The dialogues and thoughts are represented by speech boxes. Text-edit is required to fill those speech boxes. By creating textboxbase instance, we provide textbox to add some dialogues or thoughts into the cartoon.

G. Drawing function

Users can draw a picture on provided templates. so we have to build drawing function by using html canvas, html, query etc. There are almost 5 detailed functions in draw functions. First, Kids can click brush button or eraser button. So they can decide what they want to use. Also they can pick a color from color palette that has 5 colors. When they click a specific color, brush's color is changed. Kids can input speech bubble or items like stickers. They can drag and drop them on templates freely.

- Use brush
- Use eraser
- Pick a color

IV. Development environment

A. Choice of software development platform

- Platform:
  We will use Web platform due to accessibilty for kids and their parents.

- Programming language:

  Front-end : HTML, CSS, jQuery, javascript and especially Angular JS

  Back-end : php, Python

  HTML, CSS, jQuery, Javascript, php are essentially-used language for building web sites.
  Angular JS is the framework for client which is provided by Google. It extends HTML and supports dynamic applications. We think those advantages are useful to our project. Furthermore, Angular JS also provides simple and concise code.
  For back end, we will implement server with php, Java, and Python.

- Cost Estimation

- Development Environment
  OS version : OS X El Capitan
  Web Authoring tool : Textmate
  Computer resources : MacBook
  Cloud Platform : GCE

B. Software in use

- Software :
  Textmate (web authoring tool)

Islispainter (web based drawing site)
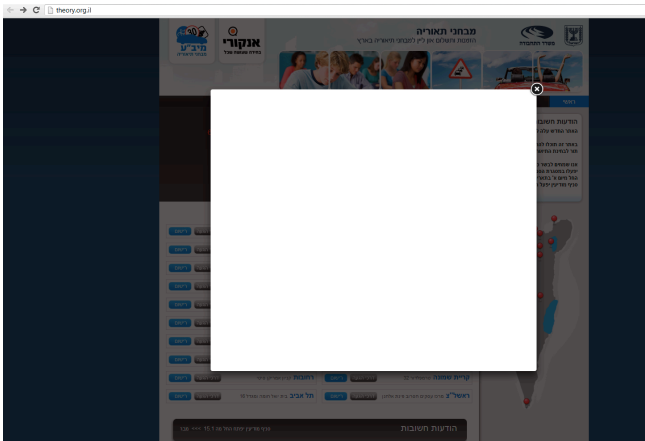pixlr.com (web based photoshop site)
GCE (Clouding Service)

- Algorithm : Cycle2 plugin (slide show)

V. Specifications

A. Selecting Window

This function is called 'layer pop-up' and it can be realized by div tag. When the pop-up comes out, the shade of other parts get dark. After selecting the menu, this pop-up window disappears automatically.

Fig. 3. *Sample screen of Layer pop-up*

- Pseudo-code:
  1. *Put <div> area into <body>*
  2. *Write contents into <div id = contents> area*
     a. *Button1 : Starting Tutorial*
     b. *Button2 : Starting New Project*
     c. *Button3 : Move to Gallery*
  3. *Add close function by using jQuery*

B. Slide Show

After the users finish their works, they can show their own cartoons as slide show. We convert their works to image files and make slide shows with them by using Cycle2 plugin. Cycle2 is jQuery-based plugin which support customize slideshows.

- pseudo-code:
  1. *Include jQuery and Cycle2 plugin into code*
  2. *Put <div tag with its classname 'cycle-slideshow' which automatically initialize the slide shows.*
  3. *Add previous and next button with default classname, 'cycle-prev' and 'cycle-next'*

C. The self-selecting tool

- pseudo-code:
  1. *Put <div id=inventory> into body*
  2. *Put <div class = inventory_item> and <div class = inventory_bubble> in <div id=inventory>drag a item or speech bubble to the canvas;*
  3. *Put a list of items by using <li> in <div class = inventory_item>The sharing function*
  4. *Put a list of speech bubble by using <li> in <div class = inventory_bubble>*
  5. *By using query, build a drag and drop functions*

D. The Sharing function

By using Google app engine or Amazon cloud, our app provide private storage which can store what is on canvas. and in the screen which show what is stored in private storage there is a sharing button. by checking some picture and clicking sharing button, you can send your pictures to public storage to sharing the pictures everyone.

- Save
  1. *put <div id=save> tag into <body>*
  2. *make a save button in <div id=button>*
     a. *save contents in private storage*
- Sharing
  1. *Put <div id= share> tag into <body>*
  2. *make a share button in <div id=share>*
     a. *save contents in public strogage*

E. Tutorial

As written above, we provide tutorials for the first-visit users. For the first-visit user, we provide tutorials automatically. For the original users, we will show it if they want. We will also use layer pop-up for tutorials. A translucent layer will show up. On the layer, there will be explanation for every functions on the screen. By clicking '?' beside the explanations, users are able to show detailed description with some images.

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1 Stackoverflow,
http://stackoverflow.com/questions/14175103/javascript-multi-layer-pop-up

Fig. 4.   *Sample of layer pop-up tutorial*
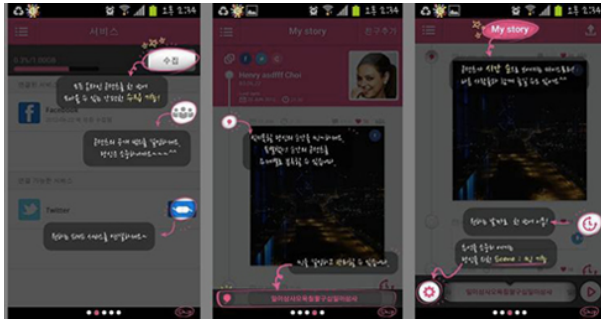
2

- Pseudo-code :
    1   *Put <div> area into <body>*
   2   *Put an image into background by '<div style = >' tag*
    3   *Put buttons on the layer by <form> and <input type = 'button'> tag*
    4   *Give event to button by javascript function(When the button is clicked show images)*

F.   *Text Editing function*
- Pseudo-code*:*
    1   *put <div id=textbox>*
    2   *make a textbox button in <div id=textbox>*
    3   *set the value of textbox size*
            a.   *set the width of textbox size*
            b.   *set the height of textbox size*
            c.   *set the value of edge of textbox*
    4   *make a textbox color button in <div id=textbox>a. set the color of text*
    5   *make a textbox shape button in <div id=textbox>a. set the shape of text*
            a.   *set the shape of text*
            b.   *set the shaed of text*

G.   *Drawing function*
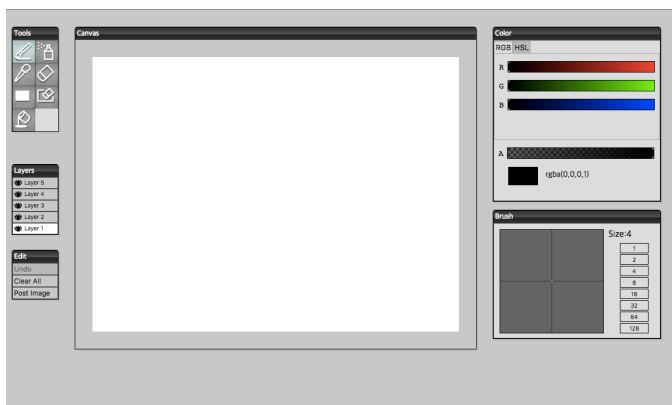
- Use brush
    1   *Put <div id=brush> area into<div class=tool>, <body>set the height of brush size = 0.5*
    2   *Make a brush button in <div id=brush>click the brush button*
    3   *Set the value of brush size*
            a.   *set the width of brush size*
            b.   *set the height of brush size*
            c.   *do math.round(this.value of brush size*10)/5*
- Use eraser
    1   *Put <div id=eraser> area into<div class=tool>, <body>*
    2   *Make a eraser button in <div id = eraser>*
    3   *Set the value of eraser size*
            a.   *set the width of eraser size*
            b.   *set the height of eraser size*
            c.   *do math.round(this.value of eraser size*10)/5*
- Pick a color
    1   *Put <div id = color_palette> into <body>*
    2   *Make <span> list of colors in <div id=js_palette>,<div id=color_palette>*
            a.   *<span data-hex="#FF5733" class=color>*
            b.   *<span data-hex="#EF1234" class=color>*