Chrome Extension

第四組：李朋軒 曾柏寧 邵衍綺

Contents
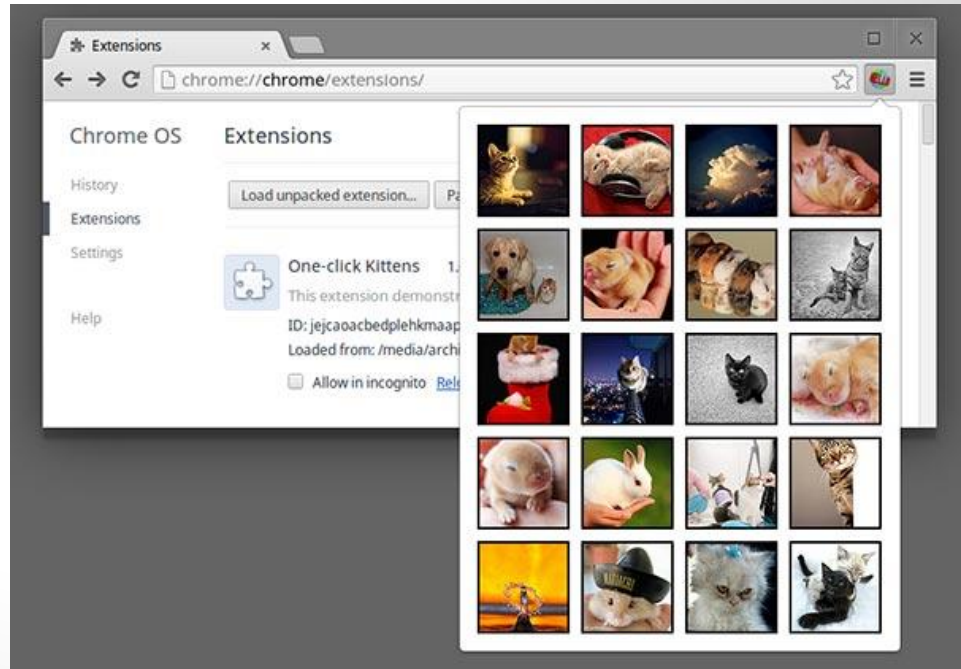
- Getting started
- More details
  - Architecture
  - Chrome.* APIs
  - Debugging
- Our example
  - Comic helper
  - Print this page
  - Embed-url

Why Chrome

Nothing new but HTML, CSS, and JavaScript

Getting Started

An example form Google:

One-click Kittens

Files

- manifest.json
- icon.png
- popup.html
- popup.js

manifest.json

Where you declare:

- extension's name, description, version…
- permission
- resource
- programs for different conponents
- etc.

In conclusion, it tells what an extension consist of and what an extension going to do.

madatory, version 1 is deprecated

```json
{
  "manifest_version": 2,

  "name": "One-click Kittens",
  "description": "This extension demonstrates a 'browser action' with kittens.",
  "version": "1.0",

  "browser_action": {
    "default_icon": "icon.png",
    "default_popup": "popup.html"
  },
  "permissions": [
    "https://secure.flickr.com/"
  ]
```
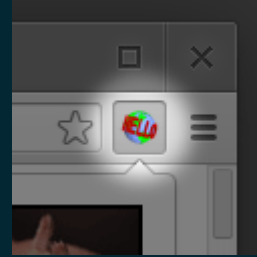
cross domain ajax

Load the extension

Extensions download from Internet are packed as .crx file, which is great for distribution, but not so great for development.

For development:
Go to *chrome://extensions*

More Details

Architecture

● Extension UIs

browser action: always exists
page action: show up when matches some condition
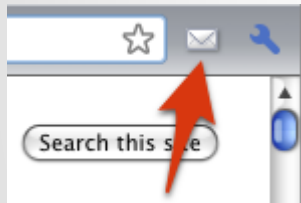
browser action

browser action with popup
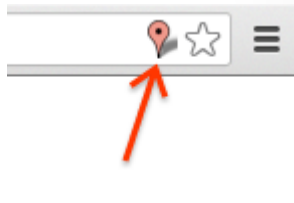
page action

other UIs: option page, Chrome context menu...

- ## The Background Page

  Persistent background page or event page

  Holds the main logic of the extension
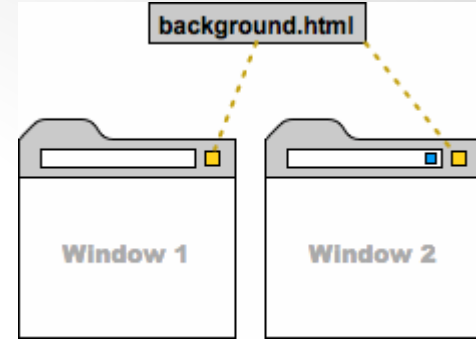
persistent background page

```
{
  "name": "My extension",
  ...
  "background": {
    "scripts": ["background.js"]
  },
  ...
}
```

event page (recommanded)

```
{
  "name": "My extension",
  ...
  "background": {
    "scripts": ["eventPage.js"],
    "persistent": false
  },
  ...
}
```

● Popup Page

Main UI that interact with users

background.html

getViews()   getBackgroundPage()

popup.html
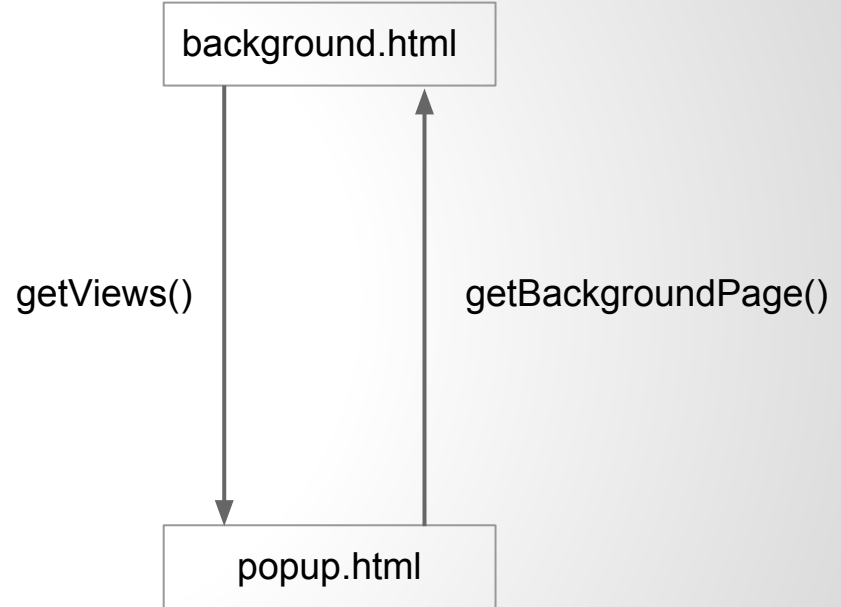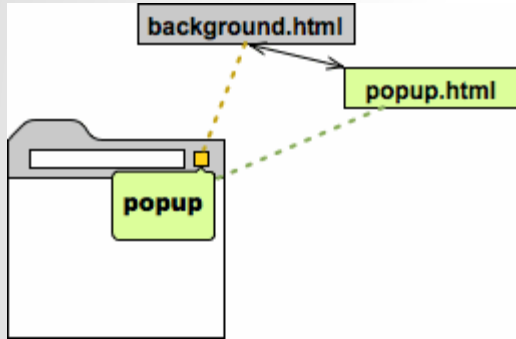
● Content Scripts

Interact with webpage's DOM

content script communicate with parent extension by message machanism

```
{
  "name": "My extension",
  ...
  "content_scripts": [
    {
      "matches": ["http://www.google.com/*"],
      "css": ["mystyles.css"],
      "js": ["jquery.js", "myscript.js"]
    }
  ],
  ...
}
```

配置/入口

manifest.json

扩展程序

博客园 - 程序员的网上家

www.cnblogs.com

Stack Overflow　Asynchronously st...　ASP.NET MVC Web

代码改变世界

博客园

插件运行环境

popup

HTML/CSS/Javascript

getBackgroundPage

页面运行环境

页面脚本

DOM

background script

Content Script

Content Script运行环境

Message

Chrome.* APIs

Tight integration with browser and more powerful than native APIs.

Tab
- + faviconUrl: string = null
- + id: int
- + incognito: bool
- + index: int
- + selected: bool
- + status: string = null
- + title: string = null
- + url: string
- + windowId: int

TabsUpdateProperties
- + selected: bool = false
- + url: string = null

BrowserAction
«manifest.browser_action»
- + default_icon: string
- + default_title: string = null
- + popup: string = null

- + setBadgeBackgroundColor(BadgeBackgroundColorDetails)
- + setBadgeText(BadgeTextDetails)
- + setIcon(IconDetails)
- + setTitle(TitleDetails)

«event»
- + onClicked(Tab)

BadgeBackgroundColorDetails
- + color: RGBA
- + tabId: int = null

BadgeTextDetails
- + tabId: int = null
- + text: string

TitleDetails
- + tabId: int = null
- + text: string

PageAction
«manifest.page_action»
- + default_icon: string
- + default_title: string = null
- + popup: string = null

- + hide(int)
- + setIcon(IconDetails)
- + setTitle(TitleDetails)
- + show(int)

«event»
- + onClicked(Tab)

IconDetails
- + imageData: ImageData = null
- + path: string = null
- + tabId: int = null

Tabs
- + captureVisibleTab(function, int)
- + connect(int, TabConnectInfo) : Port
- + create(TabsCreateProperties, function)
- + detectLanguage(int, function)
- + executeScript(int, TabExcuteScriptDetails, function)
- + get(int, function)
- + getAllInWindow(int, function)
- + getSelected(int, function)
- + insertCSS(int, TabsInsertCssDetails, function)
- + move(int, TabMoveProperties, function)
- + remove(int, function)
- + sendRequest(int, any, function)
- + update(int, TabUpdateProperties, function)

«event»
- + onAttached(int, TabAttachInfo)
- + onCreated(Tab)
- + onDetached(int, TabDetachInfo)
- + onMoved(int, TabMoveInfo)
- + onRemoved(int)
- + onSelectionChanged(int, TabSelectInfo)
- + onUpdated(int, TabChangeInfo, Tab)

TabConnectInfo
- + name: string = null

TabCreateProperties
- + index: int = null
- + selected: bool = true
- + url: string = NewTabPage
- + windowId: int = current

TabExcuteScriptDetails
- + allFrames: bool = false
- + code: string = null
- + file: string = null

TabsInsertCssDetails
- + allFrames: bool = false
- + code: string = null
- + file: string = null

«interface» Event
- + addListener(function)
- + hasListener(function) : bool
- + removeListener(function)

TabAttachInfo
- + newPosition: int
- + newWindowId: int

TabDetachInfo
- + oldPosition: int
- + oldWindowId: int

TabMoveInfo
- + fromIndex: int
- + toIndex: int
- + windowId: int

TabsMoveProperties
- + index: int = 0
- + windowId: int = current

BookmarkTreeNode
- + children: BookmarkTreeNode (array)
- + dateAdded: number = current
- + dateGroupModified: number = current
- + id: string
- + index: int = 0
- + parentId: string = null
- + title: string
- + url: string = null

Bookmarks
- + create(BookmarkBookmarkData, function)
- + get(function, string)
- + getRecent(int, function)
- + getTree(function)
- + move(function, string, BookmarkMoveDestination)
- + remove(string, function)
- + removeTree(string, function)
- + search(string, function)
- + update(function, string, BookmarkUpdateChanges)

«event»
- + onChanged(string, BookmarkChangeInfo)
- + onChildrenReordered(string, BookmarkReorderInfo)
- + onCreated(string, BookmarkTreeNode)
- + onMoved(string, BookmarkMoveInfo)
- + onRemoved(string, BookmarkRemoveInfo)

Chrome
- + bookmarks: Bookmarks
- + browserAction: BrowserAction
- + extension: Extension
- + i18n: Internationalization
- + pageAction: PageAction
- + tabs: Tabs
- + windows: Windows

TabSelectInfo
- + windowId: int

TabChangeInfo
- + status: string
- + url: string = null

Window
- + focused: bool
- + height: int
- + id: int
- + incognito: bool
- + left: int
- + tabs: Tab (array)
- + top: int
- + width: int

BookmarkChangeInfo
- + title: string
- + url: string = null

BookmarkReorderInfo
- + childIds: string (array)

BookmarkMoveInfo
- + index: int
- + oldIndex: int
- + oldParentId: string
- + parentId: string

BookmarkRemoveInfo
- + index: int
- + parentId: string

MessageSender
- + id: string
- + tab: Tab = null

Internationalization
- + getAcceptLanguages(function)
- + getMessage(string, string) : string

Windows
- + create(WindowCreateData, function)
- + get(int, function)
- + getAll(WindowGetAllInfo, function)
- + getCurrent(function)
- + getLastFocused(function)
- + remove(integer, function)
- + update(integer, WindowUpdateInfo, function)

«event»
- + onCreated(Window)
- + onFocusChanged(int)
- + onRemoved(int)

WindowCreateData
- + height: int = auto
- + left: int = autoI
- + top: int = auto
- + url: string = NewTabPage
- + width: int = auto

WindowUpdateInfo
- + height: int = auto
- + left: int = auto
- + top: int = auto
- + width: int = auto

WindowGetAllInfo
- + populate: bool

Extension
- + lastError: ExtensionError = null

- + connect(ExtensionConnectInfo, string) : Port
- + getBackgroundPage() : DOMWindow
- + getExtensionTabs(int) : DOMWindow[]
- + getURL(string) : string
- + getViews() : DOMWindow[]
- + sendRequest(string, any, function)

«event»
- + onConnectExternal(Port)
- + onRequest(any, MessageSender, function)
- + onRequestExternal(any, MessageSender, function)

ExtensionConnectInfo
- + name: string = null

ExtensionError
- + message: string

Port
- + name: string
- + sender: MessageSender = null

- + postMessage(function)

Google Chrome Extension API class model
Created 2010-04-12 by Alex Netkachov, http://alexatnet.com/
Provided AS IS. Does not include all API classes. Auxiliary classes represent method parameters defined in the API and does not exist in API.

Created with Enterprise Architect, http://sparxsystems.com

Asynchronous vs. synchronous

chrome.tabs.create(object *createProperties*, function *callback*)

```
//THIS CODE DOESN'T WORK
var tab = chrome.tabs.query({'active': true}); //WRONG!!!
chrome.tabs.update(tab.id, {url:newUrl});
```
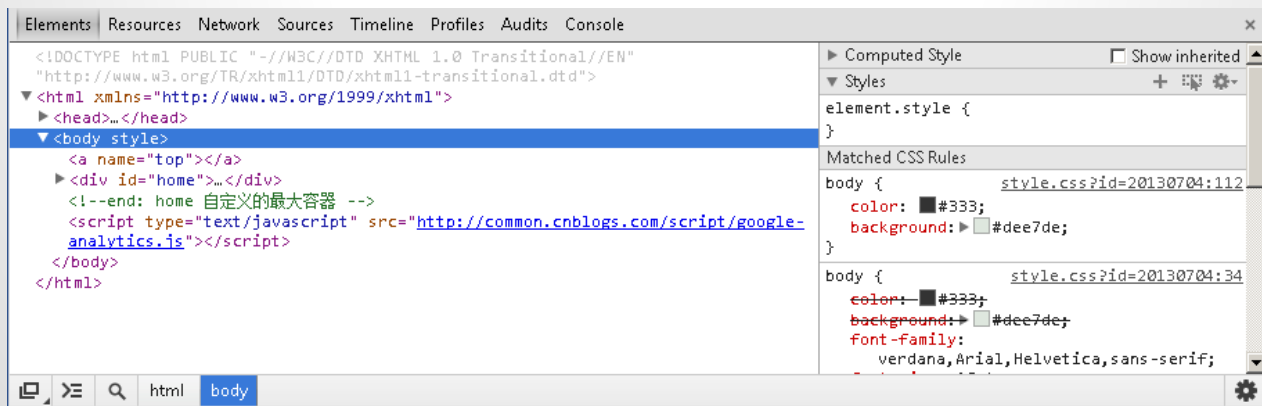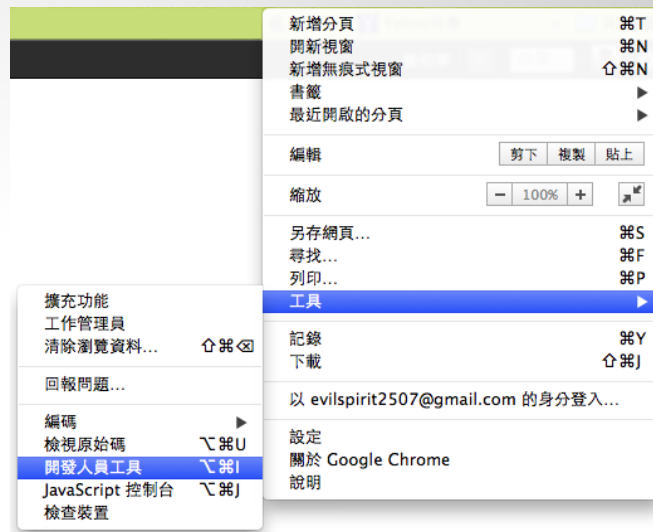
```
//THIS CODE WORKS
chrome.tabs.query({'active': true}, function(tabs) {
  chrome.tabs.update(tabs[0].id, {url: newUrl});
});
```

- chrome.tabs.create() vs. window.open()

- chrome.cookies vs. document.cookie

- chrome.alarms vs. window.setTimeout()

- chrome.storage vs. HTML5 Web storage

Debuging

In normal web page:

DOM structure, console log, network request, set breakpoint...

Content script

In source->Content Scripts
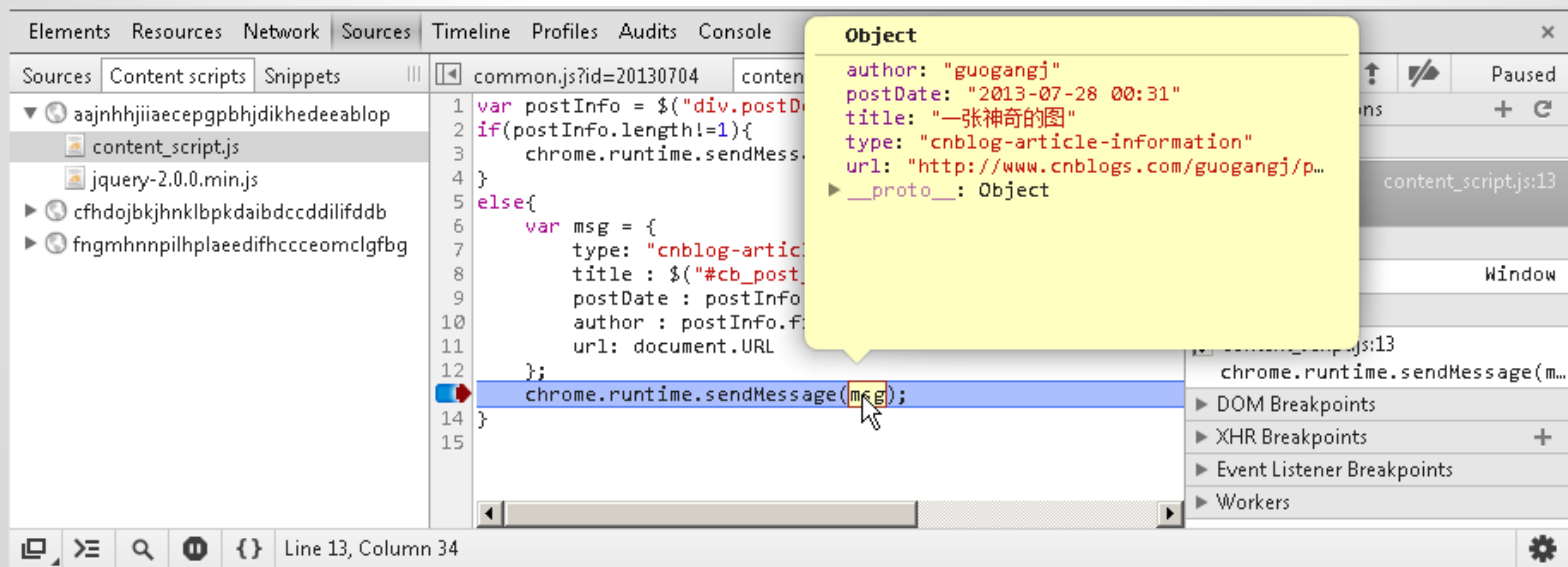
Background page

In chrome://extensions->generated background page.html
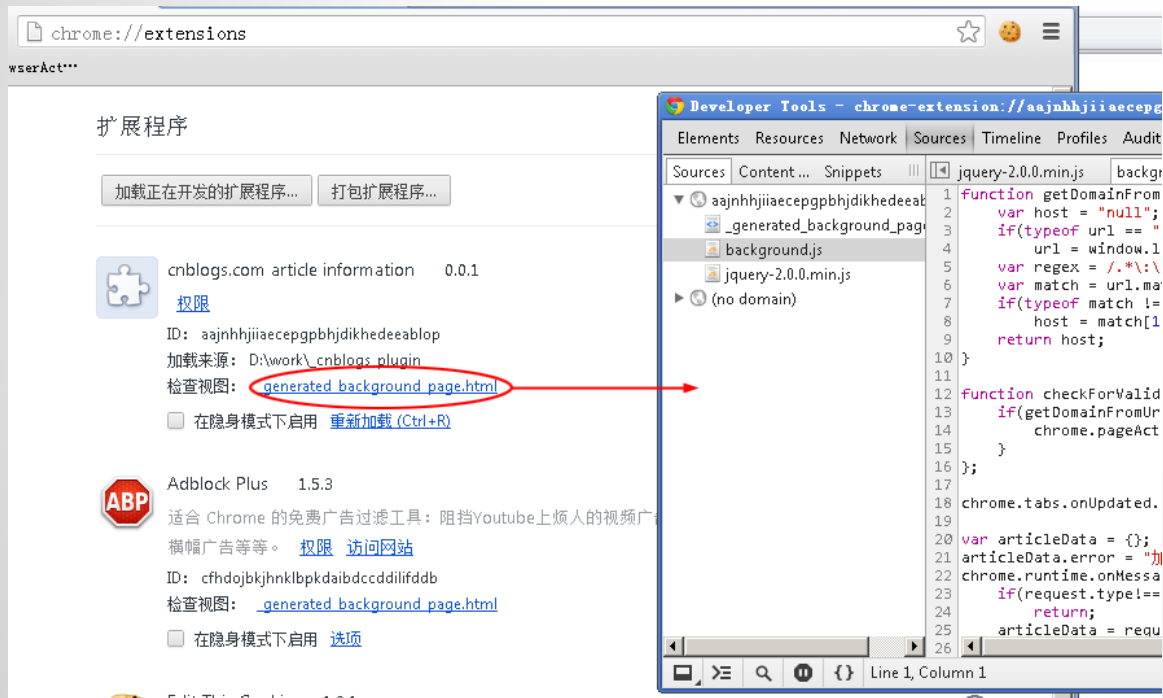
Popup

Right click the icon -> inspect the popup

Use console.log() instead of alert() !!

What's next?

- Chrome.* APIs document:
  https://developer.chrome.com/extensions/api_index

- Developer's guide:
  https://developer.chrome.com/extensions/devguide

- Lots of samples:
  https://developer.chrome.com/extensions/samples

Example: Comic Helper

- **Background**: chcek update every 30 mins
- **Popup**: show most recent comic with direct link
- **Viewer.html**: clean, no ads comic viewer which also preload the image
- **Content script**: redirect comic link from original site to our viewer

Problem Encounter

- No direct url in <a>.href

`<a href="#" onclick="cview('7884-4.html',14);return false;" id="c4" class="Ch">第04話</a>`

- No rule for sequential image url

ex: http://img18.8comic.com/2/7884/4/001_2rh.jpg

http://img19.8comic.com/2/2317/153/001_q24.jpg

- Obfuscated javascript code

```
var ch=request('ch');var p=1;var f=50;if(ch.indexOf('-')>0) {p=parseInt(ch.split('-')[1]);ch=ch.split('-')[0];}if(ch=='') ch=1;else ch=parseInt(ch);var pi='';var ni='';v
ar c='';var ci=0;var ps='';function ge(e){return document.getElementById(e);}function ss(a,b,c,d){var e=a.substring(b,b+c);return d==null?e.replace(/[a-z]*/gi,""):e;}fun
ction si(c){ge('TheImg').src='http://img'+ss(c,4,2)+'.8comic.com/'+ss(c,6,1)+'/'+ti+'/'+ss(c,0,4)+'/'+nn(p)+'_'+ss(c,mm(p)+10,3,f)+'.jpg';}function nn(n){return n<10?'00
'+n:n<100?'0'+n:n;}function mm(p){return (parseInt((p-1)/10)%10)+(((p-1)%10)*3);}function sp(){var cc=cs.length;for(var i=0;i<cc/f;i++){if(ss(cs,i*f,4)==ch) {c=ss(cs,i*f
,f,f);ci=i;break;}}if(c==''){c=ss(cs,cc-f,f);ch=chs}si(c);pi=ci>0?ss(cs,ci*f-f,4):ch;var pt='[ '+pi+' ]';ni=i<cc-1?ss(cs,ci*f+f,4):ch;var nt='[ '+ni+' ]';ps=ss(c,7,3);
initpage(ps,p,"pageindex");ge("lastchapter").innerHTML=ch;if(p>ps) {ge('next').style.display='none';ge('next2').style.display='none';'}if(p<=1) {ge('prev').style.display
='none';'ge('prev2').style.display='none';'}if(ch>=chs) ge('nextvol').style.display="none";ge('nextname').innerHTML=nt;ge('prevname').innerHTML=pt;ge('pagenum').innerHTM
L='\u7b2c'+p+'/'+ps+'\u9801';}function jn(){if(p<ps) j(p+1);else alert('\u5df2\u7d93\u662f\u6700\u5f8c\u4e00\u9801\u4e86');}function jp(){if(p>1) j(p-1);}function nv(){i
f(ch<chs) jv(ni);}function pv(){if(ch>1) jv(pi);}function lv(){jv(chs);}function j(n){document.location.href=replaceurl("ch",ch+"-"+n);}function jv(n){document.location.
href=replaceurl("ch",n);}
function showpic(itemid,allcodes,chs){if(ch=="") ch=1;else ch=parseInt(ch);var codes=allcodes.split('|');var code="";var cid=0;for(i=0;i<codes.length;i++){if(codes[i].in
dexOf(ch+" ")==0){cid=i;code=codes[i];break;};}if(code=="") for(i=0;i<codes.length;i++){if(parseInt(codes[i].split(' ')[0])>ch) {cid=i;code=codes[i];ch=parseInt(codes[i]
.split(' ')[0]);break;}}if(code=="") {cid=codes.length-1;code=codes[cid];ch=chs;};previd=cid>0?parseInt(codes[cid-1].split(' ')[0]):ch;nextid=cid<codes.length-1?parseInt
(codes[cid+1].split(' ')[0]):ch;var num=code.split(' ')[0];var sid=code.split(' ')[1];var did=code.split(' ')[2];page=code.split(' ')[3];var code=code.split(' ')[4];if(p
=="") p=1;else p=parseInt(p);document.getElementById("lastchapter").innerHTML=ch;if(p>=page) document.getElementById("next").style.display="none";if(p<=1) document.getEl
ementById("prev").style.display="none";if(ch>=chs) document.getElementById("nextvol").style.display="none";if(ch<=1) document.getElementById("prevvol").style.display="no
ne";var img="";if(p<10) img="00"+p;else if(p<100) img="0"+p;else img=p;var m=(parseInt((p-1)/10)%10)+(((p-1)%10)*3);img+="_"+code.substring(m,m+3);document.getElementBy
d("TheImg").src="http://img"+sid+".8comic.com/"+did+"/"+itemid+"/"+num+"/"+img+".jpg";initpage(page,p,"pageindex");}
```
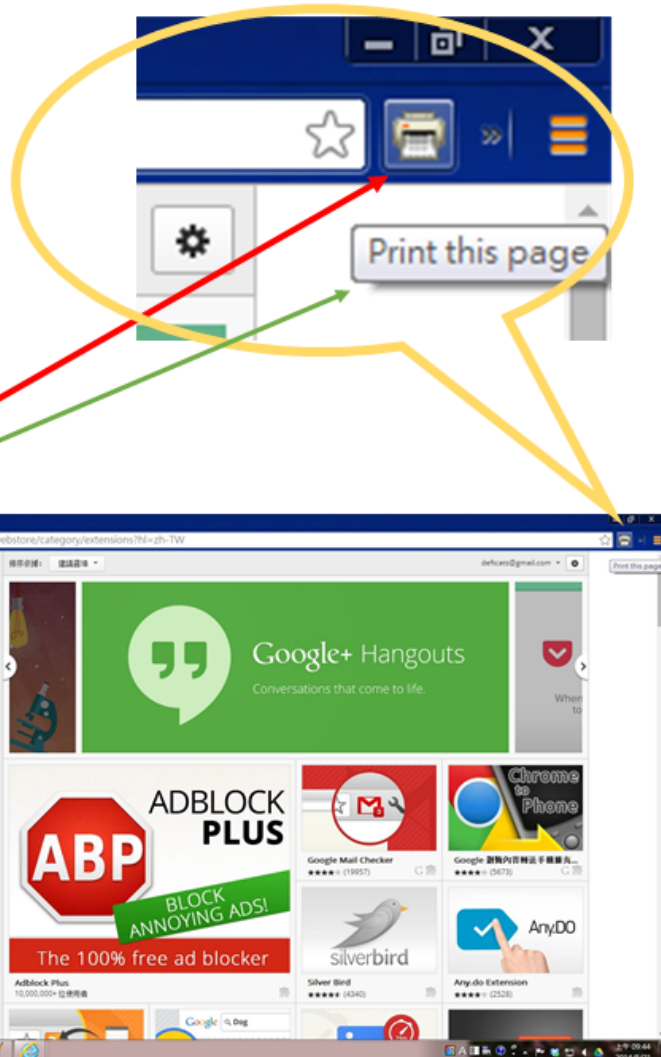
Print this page

Manifest.json

Background.js

print_16x16.png

manifest.json

- {
-   "name": "Print this page",
-   "description": "Adds a print button to the browser.",
-   "version": "1.1",
-   "background": {
-    "scripts": ["background.js"]
-   },
-   "permissions": [
-    "tabs", "http://*/*", "https://*/*"
-   ],
-   "browser_action": {
-    "default_title": "Print this page",
-    "default_icon": "print_16x16.png"
-   },
-   "manifest_version": 2
- }

連結要執行的
javascript檔案

Print this page

Background.js

chrome.browserAction.onClicked.addListener(function(tab) {

var action_url = "javascript:window.print();";

 chrome.tabs.update(tab.id, {url: action_url});

});

- chrome.browserAction.onClicked.addListener(function callback)：如果使用者點下按鍵，將觸發的事件
- javascript:window.print();"：處發事件為列印
- Tab：此extensio的獨特ID

Example: embed-url

- **Content script**: extract resources, send message, and add an ad.
- **Background script**: create new tab.
- **Popup tab**: display links

Reference

https://developer.chrome.com/extensions

http://cnblogs.com/guogangj/p/3235703.html

Q&A