A JavaScript and PHP EPUB reader web application

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Agenda

- Introduction to Project & Quick Demo
- O Preliminary Work Summary
- Core of the Project
- Experiments & Results
- Future Work / Improvement

Introduction to Project

• What is EPUB

- EPUB format
- What a EPUB file includes
 - Open Publication Structure(OPS directory)
 - Open Packaging Format(content.opf)
 - Metadata>: bibliography and rights info
 - <manifest>:content document, CSS, image and Navigation Control file(toc.ncx)
 - spine>: specify the order of the pages
 - Open eBook Publication Sturcture Container Format(OCF:container.xml)
 - Telling eReader app where to find content.opf

• Existing EPUB reader

- iBook and Google Play Books
- Firefox's add-on EPUBReader
- eBook reader device
- Why is a EPUB reader web application
 - Drawback of eBook reader device
 - Drawback of Firefox add-on
 - Drawback of other eBook reader applications

Introduction to Project(cont.)

• What's our proposal

- A JavaScript and PHP EPUB reader web application
- Supports multiple platforms/systems
- Allow user to read EPUB book easily across multiple devices
- Allow multiple users to read the book simultaneously
- Provide library service & bookshelf functionality

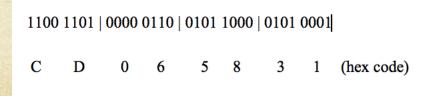
Quick Demo

Preliminary Work Summary

- Why do a research on compression algorithm
 - EPUB file is a ZIP package includes XHTML content
 - How to decompress a ZIP file
 - How a ZIP file was compressed
- Compression/decompression algorithm
 - O DEFLATE
 - O SEQUITUR
- Implement SEQUITUR algorithm in JavaScript
- o JSZip

Preliminary Work Summary(Cont.)

- DEFLATE algorithm
 - LZ77 algorithm (sliding window)
 - n Length & Distance
 - o <title>Test</title> can be compressed as <title>Test</[6;12]
 </pre>
 - Huffman code
 - 14 bytes string "FFDBABFCFFAFBE"
 - F: 1; B: 01; C: 0010;
 - O D: 0011; A:0000; E:0001;



/ \ / \ 0 1F / \ 0 1B / \ / \ 0 1 \ / \ 1E 0C 1D

Preliminary Work Summary(cont.)

o SEQUITUR

- Input string:
- "abbababbabbabbabab"
- Final:
- {A -> ab, B -> Ab, C -> BA, S -> CCbCA}
- Compressed as:RabR#0bR#1#0R#2#2b#2#0
- Implement SEQUITUR in JavaScript

Letter	Aux	Production Table	Hash
a	a	()	()
þ	ab	{}	{ab}
b	abb	{}	{ab,bb}
a	abba.	{}	{ab,bb,ba}
þ	Abbab becomes AbA	{A->ab}	{Ab,bA}
a	AbAa	{A->ab}	{Ab,bA,Aa}
þ	AbAab becomes AbAA	{ A->ab marked }	{Ab,bA,AA}
b	AbAAb becomes BAB	{ A->ab marked, B->Ab }	{BA,AB}
a	BABa	{ A->ab marked, B->Ab }	{BA,AB,Ba}
b	BABab becomes BABA becomes CC	{ A->ab marked, B->Ab, C->BA }	{CC}
þ	ССЬ	{ A->ab marked, B->Ab, C->BA }	{CC,Cb}
a	CCba	{ A->ab marked, B->Ab, C->BA }	{CC,Cb,ba}
þ	CCbab becomes CCbA	{A->ab marked, B->Ab, C->BA }	{CC,Cb,bA}
þ	CCbAb becomes CCbB	{_A->ab marked, B->Ab marked, C->BA }	{CC,Cb,bB}
a	CCbBa	{A->ab marked, B->Ab marked, C->BA }	{CC,Cb,bB,Ba}
þ	CCbBab becomes CCbBA becomes CCbC	{_A->ab marked, B->Ab marked, C->BA marked }	{CC,Cb,bC}
a	CCbCa	{_A->ab marked, B->Ab marked, C->BA marked }	{CC,Cb,bC,Ca}
þ	CCbCab becomes CCbCA	{A->ab marked, B->Ab marked, C->BA marked }	{CC,Cb,bC,CA}

Preliminary Work Summary(cont.)

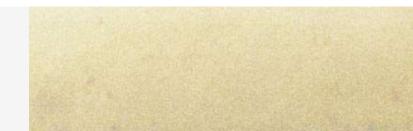
Implement SEQUITUR in JavaScript

```
<script type="text/javascript">
function compress() {
       var s = document.getElementById("submit").value;
        if (s.length < 3) {document.getElementById("demo").innerHTML = s;}
       else {
           var s1 = s[0].concat(s[1]);
           var R = new Array();
          var M = new Array();
           var last2Arr = new Array();
           last2Arr[0] = s1;
           var last2char;
           var final="";
           for (var i=2;i<s.length;i++){
              var c = s[i];
              s1 =s1.concat(c);
              last2char = s1[s1.length-2].concat(s1[s1.length-1]);
              if (last2Arr.indexOf(last2char) < 0) {</pre>
                  var index = R.indexOf(last2char);
                  if (index >= 0)
                        M[index] = true; s1 = s1.replace(last2char,index);last2Arr.pop();
                        var last2char = s1[s1.length-2].concat(s1[s1.length-1]);
                        if (last2Arr.indexOf(last2char) < 0 )</pre>
                         {last2Arr.push(last2char);}
                        else {
                         R.push(last2char);
                         var index = R.indexOf(last2char);
                         var re = new RegExp(last2char,'g');
                         s1 = s1.replace(re, index);
                         last2Arr = new Array();
                         for (var j=0;j<s1.length-1;j++)
                            last2Arr.push(s1[j].concat(s1[j+1]));
                  else {last2Arr.push(last2char); }
              )
              else {
                  R.push(last2char);
                  var index1 = R.indexOf(last2char);
                  var re = new RegExp(last2char,'g');
                  s1 = s1.replace(re,index1);
                  last2Arr = new Array();
                  for (var j=0;j<s1.length-1;j++)
                     -{
                        last2Arr.push(s1[j].concat(s1[j+1]));
                     F.
      for (var i=0; i < R.length; i++){
       if (M[i] != true) {var re = new RegExp(i, 'g'); s1 = s1.replace(re,R[i]); R[i] = i;}
      for (var i=0;i<R.length;i++){
      final = final.concat("R" + R[i]);
      final = final.concat("R" + s1);
      document.getElementById("demo").innerHTML = final;
```

Demo

```
function decompress(){
   var str = document.getElementById("submit_again").value;
   str = str.substr(1);
   var res = str.split("R");
   for (var j=res.length-2;j>=0;j--){
      if (res[j] != j)
      {var re = new RegExp(j,'g');
      res[res.length-1] = res[res.length-1].replace(re,res[j]);
   }
}
```

document.getElementById("origin").innerHTML = res[res.length-1];



Preliminary Work Summary(Cont.)

- o JSZip
 - What is JSZip
 - A JavaScript Library for creating, reading and editing ZIP files
 - How to use it?
 - Getting binary data with an AJAX request in the browser with JSZipUtils.getBinaryContent()
 - Make an instance of JSZip()
 - Update files with .file(filename)
 - Getter method. asText()

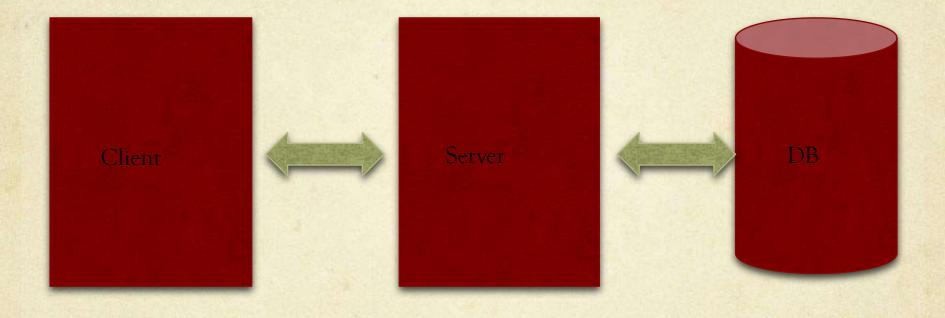
```
JSZipUtils.getBinaryContent('path/to/content.zip', function(err, data) {
    if(err) {
      throw err; // or handle err
    }
    var zip = new JSZip(data);
});
```

```
var new_zip = new JSZip();
// more files !
new_zip.load(content);
```

// you now have every files contained in the loaded zip new_zip.file("hello.txt").asText(); // "Hello World\n"

Core of the Project – Project Design

Database Architecture & Development Approach



JavaScript, Html, CSS

PHP

MySQL

XAMPP: cross-platform web application solution stack, includes Apache Server, MySQL, and PHP

Core of the Project – Project Design(cont.)

O PHP Model-View-Control pattern

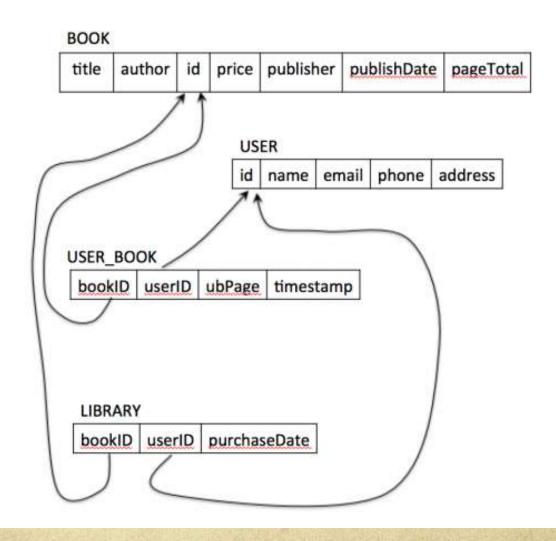
- Model The lowest level of the pattern that is responsible for maintaining data.
- View This is responsible for displaying all or a portion of the data to the user.
- Controller Software code that controls the interactions between the Model and View.

Core of the Project – Project Design(cont.)

- What features we are going to provide in the project
 - Read EPUB book easily
 - o no platform lock-in
 - no install
 - Track reading information
 - Save reading position periodically
 - Automatically bookmark
 - Bookshelf management
 - n Manage reading books
 - Library service
 - Borrow book for free
 - Limitation: limited books due to copyright
 - Future work:
 - n Upload book

Core of the Project – Project Design(cont.)

Database Schema



Core of the Project - Implementation

• Tasks list:

- Unzip EPUB file and render content in the browser
- Provide register and login/logout feature
- Register users can borrow books
- O Tracking users' reading info automatically
- Display to user the correct page
 - Display to user the exact same page as he left off last reading (login/recent book)
 - O Display the correct page of each book in the bookshelf

- Task 1 Unzip EPUB file and render content in the browser
 - Using JSZip to unzip and read EPUB book
 - Using JavaScript to parse the metadata and display the pages

```
function loadFile(bookName) {
    JSZipUtils.getBinaryContent(bookName, function(err, data) {
        if(err) {
            throw err; // or handle err
        }
    var zip = new JSZip(data);
    toc = zip.file("OEBPS/toc.ncx").asText();
    myXmlObject = document.createElement('div');
   myXmlObject.innerHTML = toc;
    content = "";
    tagArray=myXml0bject.getElementsByTagName("navPoint");
    for (i=0; i< tagArray.length;i++) {</pre>
        navArray = tagArray[i].getElementsByTagName("content");
        content = content +
                  "<a href=' javascript:changePage(\""
                  + bookName +"\",\""
                  + navArray[0].attributes.getNamedItem("src").value
                  +"\",0)'>" +tagArray[i].children[0].innerHTML + "<
    }
     elt("my-toc",0).innerHTML = content;
    }):
```

• Task 2 – provide register/login/logout feature

```
epub •
                                      File Path - : /Applications/XAMPP/xamppfiles/htdocs/epub/index.php
                             Т 🍨
      controller
                                               (no symbol selected)
                                                                    $
         book.php
                                       <?php
                                   V
                                 1
         bookinfo.php
                                                   session start();
                                 2
         bookshelf.php
                                                   ini_set('session.cookie_lifetime', 3600);
                                 3
         dbaccess.php
                                                   require_once('./controller/dbaccess.php');
                                 4
         library.php
                                 5
                                                   if (checkLogin())
                                 6
                                                   ł
         login.php
                                                        if( !isset($_REQUEST['c'])) {
                                 7
                                   V
         logout.php
                                                          $ REQUEST['c'] = 'bookshelf';
                                 8
         register.php
                                 9
                                                        ł
      index.php
                                10
                                                        switch ($_REQUEST['c'])
                                11
      model
                                                         case 'book':
                                12
         book model.php
                                                           require_once("./controller/book.php");
                                13
         bookinfo_model.php
                                                           handleBook();
                                14
         bookshelf_model.php
                                15
                                                          break;
         library_model.php
                                16
                                                          case 'logout':
                                                             require_once("./controller/logout.php");
         login_model.php
                                17
                                                             logout();
                                18
         register_model.php
                                                           break;
                                19
      view
                                                         case 'bookshelf':
                                20
         bookshelf_view.php
                                                            require_once("./controller/bookshelf.php");
                                21
        buchan-grey-weather ...
                                                           handleBookShelf();
                                22
  b-
        fleming-moonraker.e...
                                23
                                                         break;
                                                         case 'library':
                                24
        hemingway-sun-also...
  ъ
                                                           require_once("./controller/library.php");
                                25
  3
        hill-think-and-grow-ri ...
                                26
                                                           showAllBooks();
         jquery-scrollto
                                27
                                                          break;
         jszip-util.js
                                                          case 'bookinfo':
                                28
                                                            if (isset($ REQUEST['bookname'])) {
         iszip.js
                                29 🔻
```

• Task 2 – provide register/login/logout feature

Login	
Username:	
Password:	
	Login
Don't have a accour	nt? <u>Signup!</u>

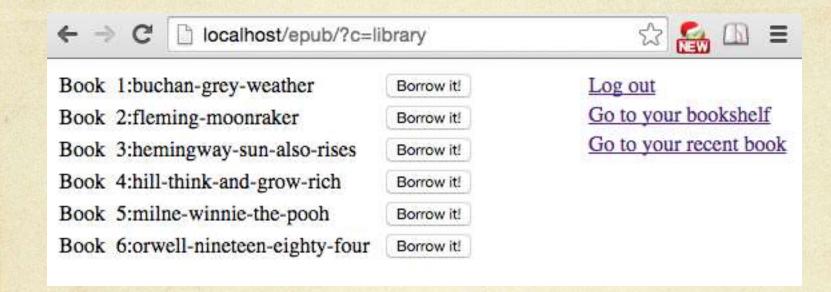
Logged out!

6

You have successfully logged out. Back to main

Please fill all	the fields!
Regist	er
Firstname:	
Lastname:	
Email:	
Phone:	
Zipcode:	
Username:	
Password:	
	Signup!

• Task 3 - Register users can borrow books



```
function assignBookToUser($booktitle,$username){
    $link= mysql_connect('127.0.0.1','root','');
    if (!$link){
        die('Could not connect: '. mysql_error());
    }
    if (!mysql_select_db('epub')){
        die('Could not select database:'. mysql_error());
    }
    $rs = mysql_query("SELECT * FROM User_Book WHERE bookTitle = '$booktitle' AND userName = '$username'");
    if (mysql_num_rows($rs) > 0) {return false;}
    else {
        $res = mysql_query("INSERT INTO User_Book (bookTitle,userName,ubPagePosition) VALUES('{$booktitle}','{$username}',0)");
        mysql_close($link);
        return $res;
    }
}
```

- Task 4 Tracking users' reading info
 - Updating reading info (bookName + chapInfo + pageInfo) periodically (every 3 sec) and automatically
 - jQuery .post()
 - o send JSON data to the server via an HTTP Post request.

```
setInterval(function(){
  var data = {
    title : titleInfo,
    chap : new_chapInfo,
    page : window.pageYOffset
  };
  $.post("./?c=book", data);
},3000);
```

```
$res = mysql_query("SELECT * FROM User_Book WHERE bookTitle = '$booktitle' AND userName = '$username'");
if (mysql_num_rows($res) > 0)
{
    $rs = mysql_query("UPDATE User_Book SET ubChapter = '$chapter',ubPagePosition = $page WHERE bookTitle = '$booktitle' AND userName = '$username'");
    mysql_close($link);
    return $rs;
}
else
{
    $rs = mysql_query("INSERT INTO User_Book (bookTitle,userName,ubChapter,ubPagePosition) VALUES('{$booktitle}', '{$username}', '{$chapter}', {$page})");
    mysql_close($link);
    return $rs;
}
```

• Task 5 – Display to user the correct page

- Display to user the exact same page as he left off last reading (login/recent book)
- Display the correct page of each book in the bookshelf
- Construct pagePosition (title + chapter + pagePosition)
- Scrolls the page/document to the specified coordinates

function getRecentBook(\$username){ Recent Book

function getBook(\$booktitle,\$username){ Specified Book
\$res = mysql_query("SELECT bookTitle,ubChapter,ubPagePosition FROM User_Book
WHERE userName = '\$username' and bookTitle = '\$booktitle'

```
function elt(id,pagePosition)
{
   setTimeout(function () {
      window.scrollTo(0, pagePosition);
   },1);
   return document.getElementById(id);
}
```

Experiment & Results

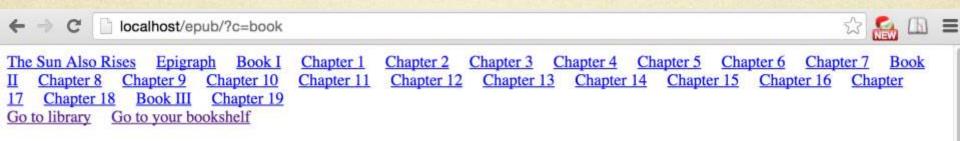
- Manual function test
 - Check the application's design and functionalities
- Testing tasks
 - Whether a user can register an account
 - Whether a user can login/logout
 - After login, whether the book shows properly
 - Whether a user can borrow a book from a library and the book will shown up in his bookshelf
 - Whether the recent book feature was updated during the reading

- Testing process (had a group of 3 people execute testing in 3 rounds)
 - Round 1: testing on Chrome, Firefox, and Safari for Mac OSX
 - Round 2: testing on Chrome, Firefox, and IE for Windows
 - Round 3: testing on iPhone, iPad, and Android Phone

- Testing tasks-whether the book shows properly
 - a user's first time login:
 - the page is empty, and there is a link to the library page. Then, the user can borrow a book from there and begin to read;



- Testing tasks whether the book shows properly
 - a user with an existing reading log in this system:
 - the page should be exactly the same as where he left off last time.



Chapter 14

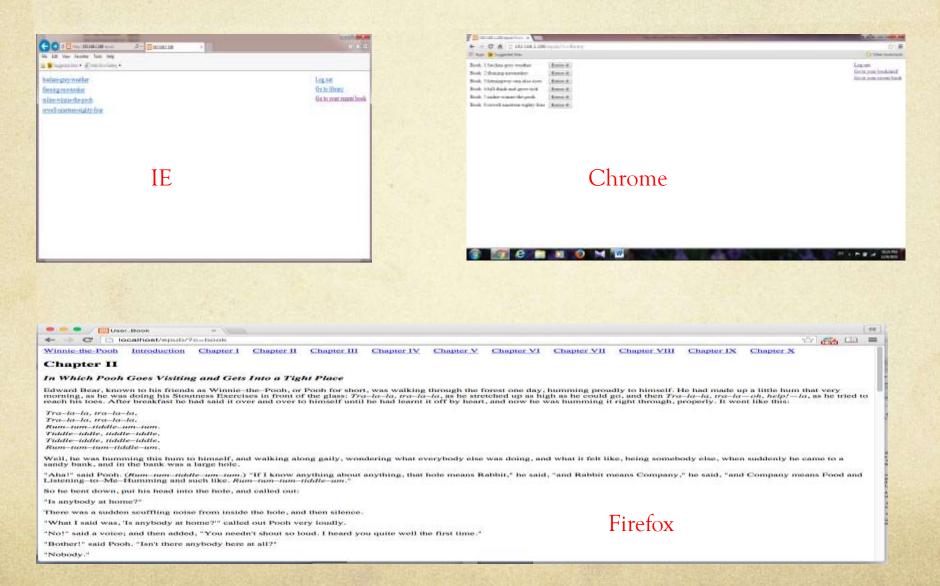
I do not know what time I got to bed. I remember undressing, putting on a bathrobe, and standing out on the balcony. I knew I was quite drunk, and when I came in I put on the light over the head of the bed and started to read. I was reading a book by Turgenieff. Probably I read the same two pages over several times. It was one of the stories in "A Sportsman's Sketches." I had read it before, but it seemed quite new. The country became very clear and the feeling of pressure in my head seemed to loosen. I was very drunk and I did not want to shut my eyes because the room would go round and round. If I kept on reading that feeling would pass.

I heard Brett and Robert Cohn come up the stairs. Cohn said good night outside the door and went on up to his room. I heard Brett go into the room next door. Mike was already in bed. He had come in with me an hour before. He woke as she came in, and they talked together. I heard them laugh. I turned off the light and tried to go to sleep. It was not necessary to read any more. I could shut my eyes without getting the wheeling sensation. But I could not sleep. There is no reason why because it is dark you should look at things differently from when it is light. The hell there isn't!

I figured that all out once, and for six months I never slept with the electric light off. That was another bright idea. To hell with women, anyway. To hell with you, Brett Ashley.

Women made such swell friends. Awfully swell. In the first place, you had to be in love with a woman to have a basis of friendship. I had been having Brett for a friend. I had not been thinking about her side of it. I had been getting something for nothing. That only delayed the presentation of the bill. The bill always came. That was one of the swell things you could count on.

• Testing on different browsers for Windows



Testing on iPhone, iPad and Android Phone 0

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Finitume [2		Contractory and			Chapter 1													
							closis were redong flotters. Wasten Swith, his che such dans of Victory Massiers, though not quickly records to pe												
Parente Carra						depicted simple an examinant last, more hombourne listance. Wiratoo reads for the observat was car off during depity Wiratoo, who was car off during depity Wiratoo, who was forty reion and had a the LB-shall, the poster with the source	δ old map mass. As seen end off it is objected poster, two large 1 from a number while the flow of a sense of above flows, flow, it is a value. It was not used type flow flow (flows or the board of links of house. It was put of the concentry drive in graphenetics flow particular data points the well. It was only flow flow (flow mass flow paper) flows the well. It was only of flow prime and flow paper flows the well. It was only of flow prime data the SVGC12000 VOL (the appetre benefit) it must	(0 a heavy black mousiache and rogg a it was seldens working, and at peop titate Wink. The flat was seven flight yend times on the way. On each land	gardly sent the late spi, and ding, appo										
						ablong metal plaque like a duiled mirror semicivitat, through the words were will a shutting to off completity. He moved as	our a for of figures which had something to do with the pro- vable formed put of the surface of the spin-band wall. We integrabelish: In internations: (In the subscript, was called or to the window: a smaller), that figure, the margements of that was very fair, but filter meaning sampains, his situation 4.	netros turnoù a reitañ and the veste sa could be dimened, but there was no w tie body mently emploaized by the bi	sank wap of the overal										
		iPhone				spirals, and though the sam was obliging everywhere. The black-remembed in BROTHER IS WARCHING VOC, the a men remer, flapped Infully in the wiral,	page, the ward looked cutd. Down in the street little addiss and the sky a bands blue, there accound to be no cutore in any or gamed drawn born overy commanding orders. These was a splatm studi, while the dath cycle holded deep into Winnersh immunity concerning and incovering the single word MOSO (like a Wardootle, and dated aver statis with a varying full	thing, occupit the posters that were plo re on the bocase. Proof internalisticly op rwit, Dowin at street level another pea- C. St the far distance a hallcopter skip	Gastarad opposite. III adds, term of interned down										
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events, we must see he is kept well away from the site. As a matter of the 1 dual be taking him to London tomentow. Lase-minute density to be outlied with the Minutey and Walter card the quence. Kerths is the ordy must Pro gate who can due the work of an ASK. There's keep him out of trouble. We'll all have to keep an eye on him until thes. Unless of course you sum to put him under look and key straight aroup. Eggestin met," he used candidly "Dual's want to put him super the load and key straight aroup."			Chapter XV			Chapter VII Part Two Chapter Chapter IX Chapter X Chapter Chapter XII Chapter XIII Chapter Chapter XV Chapter XVI Chapter													
"It shouldn't be seveness;" to men.""	"It shouldn't be never sary," said Bond. "Has be got any particular friends among the ather answ?"			There was a moment's silence in the room			I Part Three Chapter XVIII Chapter												
"Never seem lims speak to any of them encoupt Waltur and the henselhold," said Dean. "Datasay he considers himself a cut alwave the others. Perseavelly, I don't believe theor's much harm in the chops or I wouldn't have keep him. He's left alone in that benned all day long and I expect he's one of thema people who like playing the directive and peying into alter prophe's affairs. What do you say? Perfugs we could have it hike that?"			during which Bond reflected how odd it was that suspicions should have fallen so			Chapter XX Chapter XXI Chapter I Chapter XXIII Chapter XXIV Chapter Z													
										suddenly and so unanimously on one man.									
			Biood needed, keeping his throughts to himself. "World, firm," and Diras, obviously glied to leave a distanceful subject and gat back to becomes, "we've gat other fittings to talk about. Two means days to go and if d beints hell you the programme." May got up from his chair and pound heavily up and about the room behald his dow. "Today is worked," in the start and pound heavily up and about the room behald his dow. "Today is worked," in the start and pound heavily up and about the room behald pound and the start of the start room anything gots working is tolevision cancers will proceed exceptions with the disself for the room anything gots working in tolevision cancers will proceed exceptions with. Then, it has "Wather premising, the root will be operated totaght to allow the further to char. May men will start guard is workhes at two yard intervals a landwed pound from the time. There will be three attend room on the buyek opposite the channel hole in the other. There will							And did that automatically clear all the		apter XI	Andro	vid					
others? Might not Krebs be the inside man of a gang? Or was he working on his own and, if so, with what object? And what did his snooping have to do with the death of Tallon						icewoman Brand Thutfold minutes later Bond was showing his Ministry s to the uniformed guard on duty at the gate in high wire fence. RAF sergeant handed it back to him and													
										the aits will be opened again	until mulday for a final chuck and f	from that incoment, privile	and Bartsch?				o's expecting you, s		ig
										for the gyte semiger, the Moounder will be ready to get The genetic will be premouvely one daty cannot the sim. On Window memory, at doubt pre-mainly sequencing the cysts settings. The memory from the Moonley will take array the firing point and will begin their ration generations (BBC, will set up their same behind the firing point and will begin their ration generation at a three for the Moonley will take array the firing point and will begin their ration generation at three for the set of the set at three for the set of the set ingertring the chem. Now what cher if Weck news. Shipping will be chemed from the target rates			Drax broke the silence. "Well, that seems to settle it," he said, looking to Bond for confirmation. Bond care a pop-committal			ise up in the woods there." He pointed to some its a hundred yards further on towards the fs.			

confirmation. Bond gave a non-committal

nod. "Just have to leave him to you. At all

events we must see he is kent well away

from endnight on Thursday. The Navy will provide a patrol of the boundaries of the area all Horsengh Weigen engen There will be a 100° contention in one of the Major. The Monosty of Supply experts will be in a safe-age slape with diagrams in one of the Major. The Monosty of Supply experts will be in a safe-age slape with diagrams. How some and addres the socket has included they will by its being up the scenarios. Now many he interested as knows? In continuation of the socket and the society of the society of the interested as the society of the society of the society of the interested as the society of the society of the interested as the society of the society of the society of the society of the interested as the society of the society of the interested as the society of id heard him telephoning to the next guard

13

En

Future Work/ Improvement

- Future Work:
 - How to increase the number of the books
 - Upload book
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INTRODUCTION

Winnie-the-Pooh - A. A. Milne

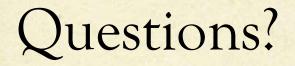
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AT AA

If you happen to have read another book about Christopher Robin, you may remember that he once had a swan (or the swan had Christopher Robin, I don't know which) and that he used to call this swan Pooh. That was a long time ago, and when we said good-bye, we took the name with us, as we didn't think the swan would want it any more. Well, when Edward Bear said that he would like an exciting name all to himself, Christopher Robin said at once, without stopping to think, that he was Winniethe-Pooh. And he was. So, as I have explained the Pooh part, I will now explain the rest of it.

You can't be in London for long without going to the Zoo. There are some people who begin the Zoo at the beginning, called WAYIN, and walk as quickly as they can past every cage until they get to the one called WAYOUT, but the nicest people go straight to the animal they love the most, and stay there. So when Christopher Robin goes to the Zoo, he goes to where the Polar Bears are, and he whispers something to the third keeper from the left, and doors are unlocked, and we wander through dark passages and up steep stairs, until at last we come to the special cage, and the cage is opened, and out trots something brown and furry, and with a happy cry of "Oh, Bear!" Christopher Robin rushes into its arms. Now this bear's name is Winnie, which shows what a good name for bears it is, but the funny thing is that we can't remember whether Winnie is called after Pooh, or Pooh after Winnie. We did know once, but we have forgotten....

I had written as far as this when Piglet looked up and said in his squeaky voice, "What about *Me*?" "My dear Piglet," I said, "the whole book is about you." "So it is about Pooh," he squeaked.



Thank you 😳