

PLYMOUTH UNIVERSITY

MODULE CODE: PUSL3111

TITLE OF PAPER: API Software Development

TIME ALLOWED

TWO HOURS

DATE

TIME

FACULTY

SCIENCE AND TECHNOLOGY

SCHOOL

COMPUTING AND MATHEMATICS

ACADEMIC YEAR

2017/18

STAGE

TWO

INSTRUCTIONS TO CANDIDATES:

Answer All Questions – Total Marks 100

Candidates are not permitted to look at the examination paper until instructed to do so.

Release to library? Yes

In-Class Test

The in-class test of PUSL3111 worth 40% of the module marks. You need to answer all the questions, do not leave blanks.

The following are some sample questions you could expect at the exam. The weights are mostly 10 marks per questions, but you could expect 20 for two of the questions.

1. Discuss advantages and disadvantages of web services.
2. Explain components of a web service with their purposes.
3. Discuss the advantages and disadvantages of REST web services.
4. Compare (look for similarities) and contrast (look for differences) between SOAP and RESTful architecture.
5. Compare (look for similarities) and contrast (look for differences) among SOAP, XML-RPC, and REST?
6. Discuss RESTful web services with their advantages and disadvantages.
7. Remember the common HTTP status codes and their ranges.

1xx – Informational	2xx – Successful	3xx – Redirection	4xx – Client Error	5xx – Server Error
This class of status code indicates a provisional response, consisting only of the Status-Line and optional headers, and is terminated by an empty line	This class of status code indicates that the client's request was successfully received, understood, and accepted.	This class of status code indicates that further action needs to be taken by the user agent in order to fulfill the request.	The 4xx class of status code is intended for cases in which the client seems to have erred.	Response status codes beginning with the digit "5" indicate cases in which the server is aware that it has erred or is incapable of performing the request.
100 – Continue 101 – Switching Protocols 102 – Processing	200 – OK 201 – Created 202 – Accepted 203 – Non-Authoritative Information 204 – No Content 205 – Reset Content 206 – Partial Content 207 – Multi-Status	300 – Multiple Choices 301 – Moved Permanently 302 – Found 303 – See Other 304 – Not Modified 305 – Use Proxy 307 – Temporary Redirect	400 – Bad Request 401 – Unauthorised 402 – Payment Required 403 – Forbidden 404 – Not Found 405 – Method Not Allowed 406 – Not Acceptable 407 – Proxy Authentication Required 408 – Request Timeout 409 – Conflict 410 – Gone 411 – Length Required 412 – Precondition Failed 413 – Request Entity Too Large 414 – Request URI Too Long 415 – Unsupported Media Type 416 – Requested Range Not Satisfiable 417 – Expectation Failed 422 – Unprocessable Entity 423 – Locked 424 – Failed Dependency 425 – Unordered Collection 426 – Upgrade Required	500 – Internal Server Error 501 – Not Implemented 502 – Bad Gateway 503 – Service Unavailable 504 – Gateway Timeout 505 – HTTP Version Not Supported 506 – Variant Also Negotiates 507 – Insufficient Storage 510 – Not Extended

8. Discuss critical web application security risks explaining what OWASP is.

9. Discuss elements of foundation security services?
10. Explain XML-RPC with its building blocks. State features of XML-RPC.
11. Explain WSDL stating important information found in a WSDL document.
12. Compare and contrast JSON, XML, and Plain Text formats with examples.
13. Take a look at the following table. You must be able to fill in the blanks during the exam.

HTTP Verb	Path	Controller#Action	Used for
GET	/photos	photos#index	display a list of all photos
GET	/photos/new	photos#new	return an HTML form for creating a new photo
POST	/photos	photos#create	create a new photo
GET	/photos/:id	photos#show	display a specific photo
GET	/photos/:id/edit	photos#edit	return an HTML form for editing a photo
PATCH/PUT	/photos/:id	photos#update	update a specific photo
DELETE	/photos/:id	photos#destroy	delete a specific photo

14. Focus on the attribute routing rules below and identify the problems/incorrect constraints/description/example ([the following is correct](#)).

Constraint	Description	Example
alpha	Matches uppercase or lowercase Latin alphabet characters (a-z, A-Z)	{x:alpha}
bool	Matches a Boolean value.	{x:bool}
datetime	Matches a Date Time value.	{x:datetime}
decimal	Matches a decimal value.	{x:decimal}
double	Matches a 64-bit floating-point value.	{x:double}
float	Matches a 32-bit floating-point value.	{x:float}
guid	Matches a GUID value.	{x:guid}
int	Matches a 32-bit integer value.	{x:int}

length	Matches a string with the specified length or within a specified range of lengths.	{x:length(6)} {x:length(1,20)}
long	Matches a 64-bit integer value.	{x:long}
max	Matches an integer with a maximum value.	{x:max(10)}
maxlength	Matches a string with a maximum length.	{x:maxlength(10)}
min	Matches an integer with a minimum value.	{x:min(10)}
minlength	Matches a string with a minimum length.	{x:minlength(10)}
range	Matches an integer within a range of values.	{x:range(10,50)}
regex	Matches a regular expression.	{x:regex(^d{3}-d{3}-d{4}\$)}

15. Look at the code below and explain how you would access this online.

```
public class BooksController : ApiController
{
    [Route("api/books/locale/{lclid:int=1033}")]
    public IEnumerable<Book> GetBooksByLocale(int lclid) { ... }
}
```

16. What are the assemblies you would use when creating a web service using ASP.NET?

17. Select the most appropriate answer for each from A to E

- a. What is the protocol used in REST??
 - i. HTTP
 - ii. SOAP
 - iii. XML
 - iv. JMX
- b. What is the category of 5XX HTTP Codes belongs to??
 - i. Client Error
 - ii. Server Error
 - iii. Redirection
 - iv. Informational