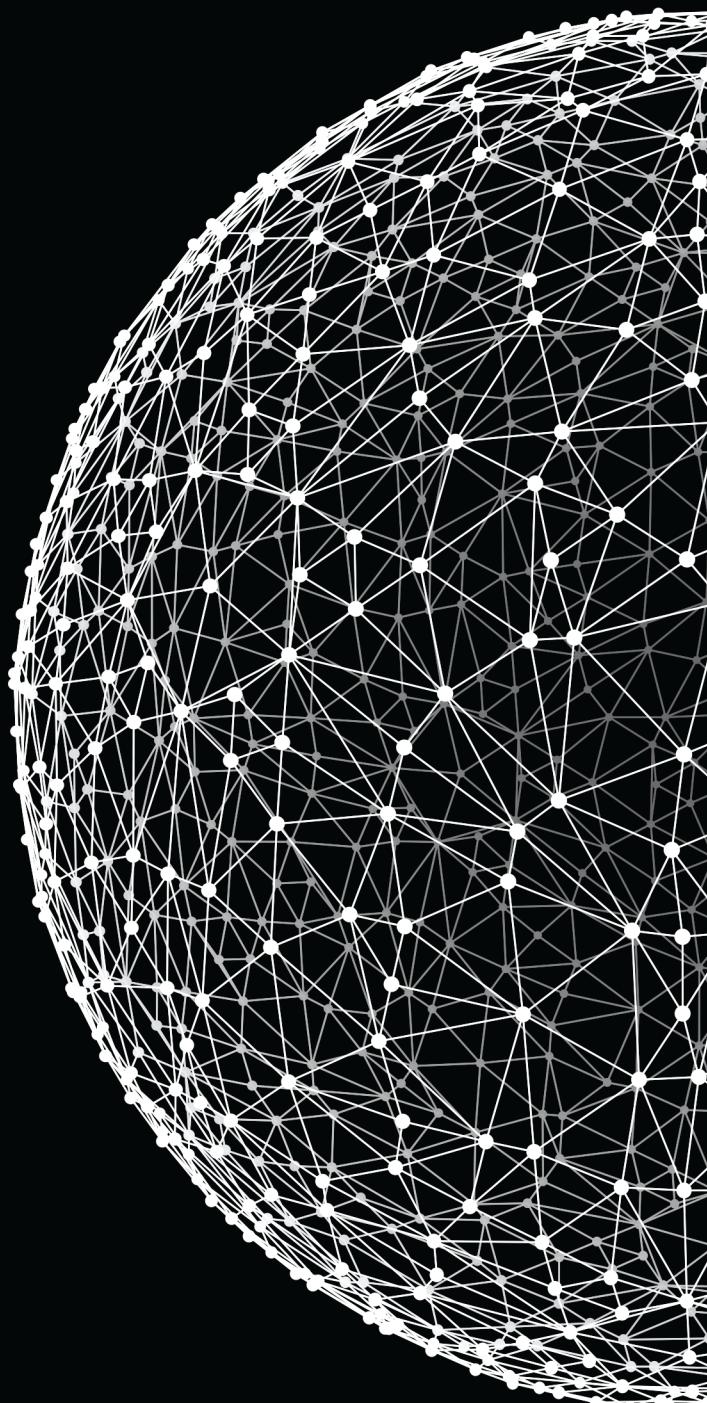


Sprint 07

Half Marathon Web

January 13, 2021



ucode connect

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Engage

DESCRIPTION

Awesome, we are glad you were able to get here!

Guess what? This **Sprint** is all about PHP. Again. Because there are so many things you need to learn before you start creating your first web service.

Passwords hashing, for example. Have you thought about how Facebook or Google stores your passwords? Have you heard anything about password encryption? Password protection is the most important aspect of any user account system. User account databases are hacked frequently, so you absolutely must do something to protect passwords of your users in case your web service is ever breached. One of the rules is to treat your password like a toothbrush: never share it and change it every couple of months.

You will also familiarize yourself with the HTTP protocol and its request methods. In short, HTTP is what makes the World Wide Web work, giving browsers a language to communicate to remote servers that host web pages. The thing that is closely related to HTTP is the XML – a tool for storing and transporting data. When you understand the basics of HTTP, you will be able to operate with files on your computer from the browser, namely create, update, and delete files.

And in the end, a more creative task will be waiting for you. Believe us, you want to see it.

BIG IDEA

Basics for web service development.

ESSENTIAL QUESTION

How to establish communication between a web page and a computer's local storage?

CHALLENGE

Learn to operate with data received from a web page.

Investigate

GUIDING QUESTIONS

We invite you to find answers to the following questions. By researching and answering them, you will gain the knowledge necessary to complete the challenge. To find answers, ask the students around you and search the internet. We encourage you to ask as many questions as possible. Note down your findings and discuss them with your peers.

- Which HTTP request methods do you know?
- What is the difference between `GET` and `POST` methods?
- What is a PHP session?
- How can you clear the session?
- What is a password hash? How can you create a hash of the password?
- How can you operate with files in PHP? Name the functions that you know.
- Are there some special functions to operate with CSV files?
- How can you inherit one class from another?
- What is `autoload`ing of classes in PHP?
- What is `cURL`? How can you use curl in PHP?
- What is XML?
- What is a `character set`? Which character sets do you know?
- How to operate with images using PHP?

GUIDING ACTIVITIES

Complete the following activities. Don't forget that you have a limited time to overcome the challenge. Use it wisely. Distribute tasks correctly.

- Find information about how you can use cURL to test an API.
- Discover how you can operate with XML in PHP.
- Go to [this link](#). It may be helpful for you in the future.
- Find out which hashing algorithms are the most popular and secure these days.
- Learn how to add salt to hashing.
- Read about "peppering" passwords.
- Find some funny memes about web services security to make sure that it really is an important thing.
- Let your brain relax from programming and watch [this video](#). Watch it to the end, this is really useful for you.
- Understand the information received, decide what is paramount and what is not for you.
- Clone your git repository issued on the challenge page in the LMS.
- Brainstorm with other students and find more than one solution.
- Try to implement your thoughts in code.

ANALYSIS

Analyze your findings. What conclusions have you made after completing guiding questions and activities? In addition to your thoughts and conclusions, here are some more analysis results.

- Be attentive to all statements of the story. Examine the given examples carefully. They may contain details that are not mentioned in the task.
- Perform only those tasks that are given in the story.
- Submit only the specified files in the required directory and nothing else. In case you are allowed to submit any files to complete the task you should submit only useful files. Garbage shall not pass.
- It is recommended to complete tasks according to the rules specified in the following style guides:
 - HTML and CSS: [Google HTML/CSS Style Guide](#). As per section [3.1.7 Optional Tags](#), it doesn't apply. Do not omit optional tags, such as `<head>` or `<body>`
 - PHP: [PSR-12: Extended Coding Style](#)
- Use only the functions that are allowed in a certain task.
- The solution will be checked and graded by students like you. [Peer-to-Peer learning](#).
- If you have any questions or don't understand something, ask other students or just Google it.

Act: Task 00

NAME

Cookie counter

DIRECTORY

t00/

SUBMIT

index.php

ALLOWED

PHP, HTML

LEGEND

"[after witnessing Scott transform into Giant-Man] Iron Man: Okay, anybody on our side hiding any shocking and fantastic abilities they'd like to disclose? I'm open to suggestions."

DESCRIPTION

You have probably heard about one fantastic ability of servers not to lose data you have entered when you reload the page. It is made possible by cookies.

Set up your local PHP server for opening web pages with PHP code (if you haven't done it yet). Create a web page that shows the count of page loads for the last minute.

EXAMPLE

Cookie counter

This page was loaded 7 time(s) in last minute

Act: Task 01

NAME

Session for new

DIRECTORY

t01/

SUBMIT

index.php

ALLOWED

PHP, HTML

DESCRIPTION

Create a web page with the form you created earlier (information about hero).

See the [EXAMPLE](#). This time your page must save the submitted data to the session.

- if data wasn't saved at the session earlier - show the form with a [SEND](#) button
- if some data is contained in the session - show only the data and a [FORGET](#) button, which clears the session. See the [EXAMPLE](#)

Note that the data can be sent via GET and via POST.

EXAMPLE

Session for new

About HERO

Real Name: Carol Danvers Current Alias: Captain Marvel Age: 29

Carol Danvers, also known as Captain Marvel, is a former United States Air Force pilot who, upon being exposed to the energy of the Tesseract via the destruction of the Light Speed Engine, obtained cosmic powers.

About:

Photo: No file chosen

Powers:

Strength Speed Intelligence Teleportation Immortal Another

Level of control:

Publicity:

UNKNOWN LIKE A GHOST I AM IN COMICS I HAVE FUN CLUB SUPERSTAR

Session for new

name : Carol Danvers
alias : Captain Marvel
age : 29

description : Carol Danvers, also known as Captain Marvel, is a former United States Air Force pilot who, upon being exposed to the energy of the Tesseract via the destruction of the Light Speed Engine, obtained cosmic powers.

photo :
experience : 2
level : 10
purpose : 2

Act: Task 02

NAME

Hack it!

DIRECTORY

t02/

SUBMIT

index.php

ALLOWED

PHP, HTML

LEGEND

"I should probably look into that once my decryption program finishes breaking into all of S.H.I.E.L.D.'s secure files."

DESCRIPTION

Create a web page with input fields for a password and for salt.
(Read about the role of 'salt' in the context of password encryption on the internet).
Also, add a **Save** button to save data at a session. If the data was saved, show the hashed with salt password on page and add a field to guess the password.
Add a **Clear** button that allows to clear the session.

If the user enters the right password, display a message **Hacked!**, clean the previous session, and go to the page with the password input field for new password saving.

If the entered password is incorrect, show a message **Access denied!** with red color on the same page.

See the **EXAMPLE**.

EXAMPLE

Password

Password not saved at session.

Password for saving to session

Salt for saving to session

Password

Password saved at session.

Hash is \$1\$In5NIpON\$tkfxewLIL9afdiafn5RkM.

Try to guess:

Password

Hacked!

Password not saved at session.

Password for saving to session

Salt for saving to session

Act: Task 03

NAME

Charset

DIRECTORY

t03/

SUBMIT

index.php

ALLOWED

PHP, HTML

LEGEND

"HYDRA, S.H.I.E.L.D., two sides of a coin that's no longer currency."

DESCRIPTION

Just like in our legend, where HYDRA and S.H.I.E.L.D. are two sides of a coin, the same characters may differ depending on the encoding as well.

Create a web page for string conversion with three different charsets.

The web page must have:

- a field for an input string to convert
- a field with three selection options (three charset types)
- a `Change charset` button to change the charset
- a `Clear` button to return the page to initial state
- output of not active fields with converted strings
(can be several if more than one charset is selected)

See the [EXAMPLE](#).

EXAMPLE

Charset

Change charset:

Select charset or several charsets:

UTF-8
ISO-8859-1
Windows-1252

Charset

Change charset:

Select charset or several charsets:

UTF-8
ISO-8859-1
Windows-1252

Input string:

UTF-8

ISO-8859-1

Windows-1252

Act: Task 04

NAME

Files

DIRECTORY

t04/

SUBMIT

index.php, File.php, FilesList.php

ALLOWED

PHP, HTML

LEGEND

"Tony Stark: J.A.R.V.I.S., are you up?
J.A.R.V.I.S.: For you sir, always.
Tony Stark: I'd like to open a new project file, index as: Mark 2.
J.A.R.V.I.S.: Shall I store this on the Stark Industries' central database?
Tony Stark: I don't know who to trust right now. 'Til further notice, why don't we just keep everything on my private server.
J.A.R.V.I.S.: Working on a secret project, are we, sir?
Tony Stark: I don't want this winding up in the wrong hands. Maybe in mine it could actually do some good."

DESCRIPTION

Create a web page with:

- an input field for a file name
- an input field for content
- a button for creating a file

When the `Create file` button is clicked:

- create a file with the name from the corresponding field in the "tmp" folder
- write to the file the data from the field with content
- if a file with such a name already exists - add text to the end of the file

Under the form show the actual list of files in the "tmp" folder.

Upon clicking on the name of a file - show content of the selected file. Also, there should be a button for deleting the current file.

See the **CONSOLE OUTPUT** and **EXAMPLE**.

Create classes for files manipulations, with the release of resources in the destructor:

- `FilesList` - all manipulations with a list of files
- `File` - all manipulations with files (create, write, read)

CONSOLE OUTPUT

```
>php t04/test.php | cat -e
volatile, self-obsessed, don't play well with others.$
<ul><li><a href="?file=tony_stark_characteristic">tony_stark_characteristic</a></li></ul>$
```

EXAMPLE

```
<?php

/*
    Task 04 (test.php)
    Task name: Files
*/

function autoload($pClassName)
{
    include(__DIR__ . '/' . $pClassName . '.php');
}
spl_autoload_register("autoload");

$file = new File( "tmp/tony_stark_characteristic");
$file->write("volatile, self-obsessed, don't play well with others.");

$content = $file->toList();
echo $content . "\n";

$list = new FilesList("tmp");
echo $list->toList() . "\n";
```

Files

File name: Content:

Files

File name: Content:
Former leaders
 Peggy Carter +
 Howard Stark +

Chester Phillips +
 R. Keller Alexander Pierce
+
 Nick Fury
Maria Hill Robert Gonzales +

(separate faction, until merge)
 Jeffrey Mace +

Phil Coulson +
 Daisy Johnson

Files

File name:

Content:

List of files:

- [shield_archive](#)

Selected file: "*tmp/shield_archive*"

Content: Former leaders
Peggy Carter †
Howard Stark †
Chester Phillips †
R. Keller Alexander Pierce †
Nick Fury
Maria Hill Robert Gonzales †
(separate faction, until merge)
Jeffrey Mace †
Phil Coulson †
Daisy Johnson

Act: Task 05

NAME

WhoIsWho

DIRECTORY

t05/

SUBMIT

index.php, *.php

ALLOWED

PHP, HTML

LEGEND

"Pepper Potts after destroying Killian: Oh my God, that was really violent."

DESCRIPTION

That is really violent - you may say while developing your own small CSV reader. But still, it will be very useful for your skills.

Your reader must have the following features:

- open a file with every path in your file system
- filter by every column with all existing values in this column

See the [EXAMPLE](#). Also, you can use `marvel_characters_info.csv` from resources for testing.

EXAMPLE

Parsing CSV data

Upload file: No file chosen

Parsing CSV data

Upload file: No file chosen

Filter: NOT SELECTED

ID	Name	Alignment	Gender	EyeColor	Race	HairColor	Publisher	SkinColor	Height	Weight
0	A-Bomb	good	Male	yellow	Human	No Hair	Marvel Comics	-	203	441
1	Abe Sapien	good	Male	blue	Icthyo Sapien	No Hair	Dark Horse Comics	blue	191	65
2	Abin Sur	good	Male	blue	Ungaran	No Hair	DC Comics	red	185	90
3	Abomination	bad	Male	green	Human / Radiation	No Hair	Marvel Comics	-	203	441
4	Abraxas	bad	Male	blue	Cosmic Entity	Black	Marvel Comics	-	-99	-99
5	Absorbing Man	bad	Male	blue	Human	No Hair	Marvel Comics	-	193	122

Parsing CSV data

Upload file: NOT SELECTED No file chosen Upload											
Filter: good APPLY											
ID	Name	Alignment	Gender	EyeColor	Race	HairColor	Publisher	SkinColor	Height	Weight	
0	Abe Sapien	good	Male	yellow	Human	No Hair	Marvel Comics	-	203	441	
1	Abin Sur	good	Male	blue	Ichtyo Sapien	No Hair	Dark Horse Comics	blue	191	65	
2	Abomination	bad	Male	green	Human / Radiation	No Hair	Marvel Comics	-	203	441	
4	Abraxas	bad	Male	blue	Cosmic Entity	Black	Marvel Comics	-	-99	-99	
5	Absorbing Man	bad	Male	blue	Human	No Hair	Marvel Comics	-	193	122	

Parsing CSV data

Upload file: Choose File No file chosen Upload											
Filter: good APPLY											
ID	Name	Alignment	Gender	EyeColor	Race	HairColor	Publisher	SkinColor	Height	Weight	
0	A-Bomb	good	Male	yellow	Human	No Hair	Marvel Comics	-	203	441	
1	Abe Sapien	good	Male	blue	Ichtyo Sapien	No Hair	Dark Horse Comics	blue	191	65	
2	Abin Sur	good	Male	blue	Ungaran	No Hair	DC Comics	red	185	90	
6	Adam Monroe	good	Male	blue	-	Blond	NBC - Heroes	-	-99	-99	
7	Adam Strange	good	Male	blue	Human	Blond	DC Comics	-	185	88	
8	Agent 13	good	Female	blue	-	Blond	Marvel Comics	-	173	61	

Act: Task 06

NAME

Notepad mini

DIRECTORY

t06/

SUBMIT

index.php, Note.php, NotePad.php

ALLOWED

PHP, HTML

LEGEND

"Jane Foster: Years of research. Gone.
Darcy: They even took my iPod.
Dr. Erik Selvig: What about the backups?
Jane Foster: They took our backups. They took the backups of our backups. They were extremely thorough.
Darcy: Just downloaded like thirty songs onto there."

DESCRIPTION

Help Jane to restore data.

Create a web form for notes with:

- note name
- note importance - low, medium, high
- note content

By clicking a button:

- add the current date/time
- serialize data to JSON
- save data in the file

Under the form show a list of saved notes:

- "date > name" - link to see the details of the notes
- "delete" - link to delete the current note

Use a single page. See the EXAMPLE.

EXAMPLE

Notepad mini

Name

low

Text of note...

List of notes

- [2019-09-28 09:14:08 > Read about Thor DELETE](#)
- [2019-09-28 09:44:15 > Find Thor on Facebook DELETE](#)
- [2019-09-28 09:45:19 > Horse DELETE](#)

Detail of "Horse"

- date: **2019-09-28 09:45:19**
- name: **Horse**
- importance: **medium**
- text: **Explain Thor that we are not using horses for movement anymore.**

Act: Task 07

NAME

Data to XML

DIRECTORY

t07/

SUBMIT

index.php, AvengerQuote.php, ListAvengerQuotes.php, Comment.php

ALLOWED

PHP, HTML

LEGEND

"If you're nothing without this suit then you shouldn't have it."

DESCRIPTION

Do you know what XML is? Do you know for which purposes it can be used?
In simple words - HTML is a "suit" for XML.

Create a class `AvengerQuote` with such properties:

- id
- author - name of the Avenger who said it
- quote
- photo - array of links to images from a movie scene
- publishDate
- comments - object date, comment

You may also need `ListAvengerQuotes` and `Comment` classes.

Create functions to convert arrays of `AvengerQuote` to and from XML:

- `toXML ($fileName)` - save XML to file avenger_quote.xml
- `fromXML ($fileName)` - read XML from file avenger_quote.xml

Create an array of four `AvengerQuote` objects with at least one photo and one comment.

Show on page arrays of `AvengerQuote` before and after XML conversion in two columns.

EXAMPLE

Avenger Quote to XML

```
To XML
ListAvengerQuotes Object
(
    [_list:protected] => Array
        (
            [0] => AvengerQuote Object
                (
                    [id:protected] => 6206
                    [author:protected] => Tony Stark
                    [quote:protected] => I know I said no more surprises,
but I gotta say, I was really hoping to pull off one last one.
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/tony-stark-iron-man-avengers-endgame-607.jpg
                        )
                    [publishDate:protected] => 17-09-2019
                    [comments:protected] => Array
                        (
                            [0] => Comment Object
                                (
                                    [date:protected] => 2019-09-29
                                    [comment:protected] => My first favourite quote of Tony Stark.
                                )
                        )
                )
            [1] => AvengerQuote Object
                (
                    [id:protected] => 2937
                    [author:protected] => Bruce Banner
                    [quote:protected] => That's my secret, captain: I'm always angry.
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/bruce-banner-avengers-261.jpg
                        )
                    [publishDate:protected] => 17-09-2019
                    [comments:protected] => Array
                        (
                            [0] => Comment Object
                                (
                                    [date:protected] => 2019-09-29
                                    [comment:protected] => My first favourite quote of Bruce Banner.
                                )
                        )
                )
            [2] => AvengerQuote Object
                (
                    [id:protected] => 1892
                    [author:protected] => Tony Stark
                    [quote:protected] => Following is not really my style.
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/bruce-banner-avengers-261.jpg
                        )
                )
        )
)

From XML
ListAvengerQuotes Object
(
    [_list:protected] => Array
        (
            [0] => AvengerQuote Object
                (
                    [id:protected] => 5942
                    [author:protected] => Tony Stark
                    [quote:protected] => Tony Stark
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/tony-stark-iron-man-avengers-endgame-607.jpg
                        )
                    [publishDate:protected] => 17-09-2019
                    [comments:protected] => Array
                        (
                            [0] => Comment Object
                                (
                                    [date:protected] => 2019-09-29
                                    [comment:protected] => My first favourite quote of Tony Stark.
                                )
                        )
                )
            [1] => AvengerQuote Object
                (
                    [id:protected] => 1333
                    [author:protected] => Bruce Banner
                    [quote:protected] => Bruce Banner
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/bruce-banner-avengers-261.jpg
                        )
                    [publishDate:protected] => 17-09-2019
                    [comments:protected] => Array
                        (
                            [0] => Comment Object
                                (
                                    [date:protected] => 2019-09-29
                                    [comment:protected] => My first favourite quote of Bruce Banner.
                                )
                        )
                )
            [2] => AvengerQuote Object
                (
                    [id:protected] => 6637
                    [author:protected] => Tony Stark
                    [quote:protected] => Tony Stark
                    [photo:protected] => Array
                        (
                            [0] => https://ficquotes.com/images/quotes/bruce-banner-avengers-261.jpg
                        )
                )
        )
)
```

Act: Task 08

NAME

Show other sites

DIRECTORY

t08/

SUBMIT

index.php

ALLOWED

PHP, HTML

LEGEND

"Spider-Man: [referring to Captain America's shield]
That thing doesn't obey the laws of physics at all!"

DESCRIPTION

Create a web page with a form:

- input for a url address
- a go button

Upon pressing the button:

- load the page from the url address
- get content between <body> tags

On the page, show the HTML code of content in <div> tags.

EXAMPLE

Show other sites

url go BACK

url: https://apply.icode.world

```
<body>
<!-- Google Tag Manager (noscript) -->
<noscript><iframe src="https://www.googletagmanager.com/ns.html?id=GTM-KX4SM8M" height="0" width="0" style="display:none;visibility:hidden"></iframe></noscript>
<!-- End Google Tag Manager (noscript) -->
<app-root>
<noscript>Please enable JavaScript to continue using this application.</noscript>
<script src="polyfills-es5.99fab8b98b7f7a9ec42d.js" nomodule defer></script><script src="polyfills-es2015.d4798e4027bf84148e89.js" type="module"></script><script src="runtime-es2015.35bbc9e9904e8e4e711f.js">
```

Show other sites

url go BACK

Type an URL...

Act: Task 09

NAME

Marvel API

DIRECTORY

t09/

SUBMIT

index.php, *.css

ALLOWED

PHP, HTML, CSS

LEGEND

"The Collector: Before creation itself, there were six singularities. Then the universe exploded into existence, and the remnants of these systems were forged into concentrated ingots... Infinity Stones."

DESCRIPTION

Did you know that Marvel have their own API? They do. Maybe you can even find Infinity Stones there... Who knows. Your mission for this task is to explore the features of their API.

Go to the [link](#), figure out what you can get from there and how. Don't forget to use cURL for your convenience.

Create a web page that displays the API request output in a structured format (not JSON). You can choose any endpoint that you want. But your page header should be modified in accordance with name of this endpoint. Also, you can create the same design as in the example or create your own. It's up to you.

See the [EXAMPLE](#).

EXAMPLE

Comics from Marvel API

code: 200

status: Ok

copyright: © 2019 MARVEL

attributionText: Data provided by Marvel. © 2019 MARVEL

attributionHTML: [Data provided by Marvel. © 2019 MARVEL](#)

etag: 7876897caa5d6cafd605905b8cb5f0659be6f1f

data:

offset: 0

limit: 20

total: 45380

count: 20

results:

0:

id: 1332

digitalId: 0

title: X-Men: Days of Future Past (Trade Paperback)

issueNumber: 0

variantDescription:

description: "Re-live the legendary first journey into the dystopian future of 2013 - where Sentinels stalk the Earth, and the X-Men are humanity's only hope...until they die! Also featuring the first appearance of Alpha Flight, the return of the Wendigo, the history of the X-Men from Cyclops himself...and a demon for Christmas!?"

Characters from Marvel API

results:

0:

id: 1011334

name: 3-D Man

description:

modified: 2014-04-29T14:18:17-0400

thumbnail:

path: <http://i.annihil.us/u/prod/marvel/i/mg/c/e0/535fecbbb9784>

extension: jpg

resourceURI: <http://gateway.marvel.com/v1/public/characters/1011334>

comics:

available: 12

collectionURI: <http://gateway.marvel.com/v1/public/characters/1011334/comics>

items:

0:

resourceURI: <http://gateway.marvel.com/v1/public/comics/21366>

name: Avengers: The Initiative (2007) #14

1:

resourceURI: <http://gateway.marvel.com/v1/public/comics/24571>

Act: Task 10

NAME

Make square image

DIRECTORY

t10/

SUBMIT

index.php, *.css

ALLOWED

PHP, HTML, CSS

LEGEND

"Tony Stark: Dude, you're embarrassing me in front of the wizards."

DESCRIPTION

Create a web page with the form on which you must place:

- an input field for a url to an image
- a button

When the form receives a url, the page will display the image.

Upon clicking the button:

- load the image from the link
- cut the bigger side to create a square image
- create a new square image from:
 - prepared image
 - R channel
 - G channel
 - B channel
- show the obtained image on the page

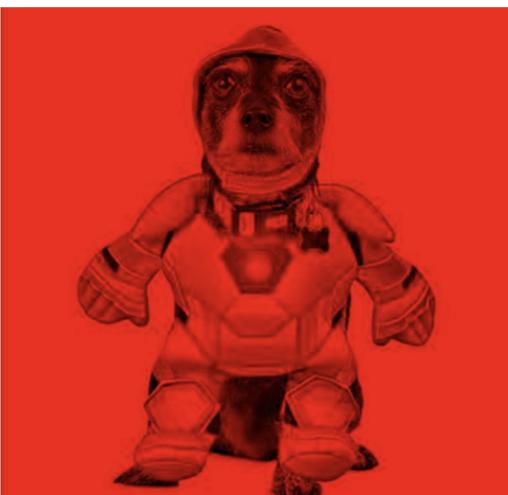
See the [EXAMPLE](#).

EXAMPLE

Make square image

Make square image

<https://petco.scene7.com/is/image/PETCO/2968998-cente>



Share

PUBLISHING

Last but not least, the final stage of your work is to publish it. This allows you to share your challenges, solutions, and reflections with local and global audiences. During this stage, you will discover ways of getting external evaluation and feedback on your work. As a result, you will get the most out of the challenge, and get a better understanding of both your achievements and missteps.

To share your work, you can create:

- a text post, as a summary of your reflection
- charts, infographics or other ways to visualize your information
- a video, either of your work, or a reflection video
- an audio podcast. Record a story about your experience
- a photo report with a small post

Helpful tools:

- [Canva](#) - a good way to visualize your data
- [QuickTime](#) - an easy way to capture your screen, record video or audio

Examples of ways to share your experience:

- [Facebook](#) - create and share a post that will inspire your friends
- [YouTube](#) - upload an exciting video
- [GitHub](#) - share and describe your solution
- [Telegraph](#) - create a post that you can easily share on Telegram
- [Instagram](#) - share photos and stories from ucode. Don't forget to tag us :)

Share what you've learned and accomplished with your local community and the world. Use [#ucode](#) and [#CBLWorld](#) on social media.