PHP BEGINNER SUSHI

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ENVIRONMENT NOTES

Card 1 of 9

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1

PHP is intended to generate websites running in a web server. So first thing we are going to need to start learning php is a sever able to execute our code. There are many options to get this:

- **Online editor**: There are many options out there, an examplo is Cloud 9 (http://c9.io), it allows editing and running our code all in the same tool.
- **External server**: You will need to install PHP, Apache, & FTP on a server and have it configured to allow access to each student to make modifications inside the html root directory of the server.
- **Server in same computer**: An alternative way is to use a LAMP, WAMP or XAMP installed for each student.

  If you are using Windows or Mac you can also use Docker Kitematic and look for a "php-nginx" instance. Docker is an environment that let you running virtual servers on your computer, with all configured.

2

Depending on the option you choose user will be required to use some other additional tools.

- **Online editor**: you will have everything you need in the tool.
- **External server**: You will need a FTP client to conect to the server and upload your files. A code editor is also required. We recommend using Atom (atom.io)
- **Same computer**: You will need to put your files in a certain folder that will depend on the method you have choosen to install the server and the operating system. You will also need a code editor.

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3

In this point we are going to see how to run a simple script on Cloud 9.

- Create an account in Cloud 9
- Log in into the platform
- Create a new workspace (project) choosing the "PHP, Apache & ..." template. You can give it the name you preffer.
- You will see in the left that there are some files included one called `hello-world.php`. Open it.
- Now you'll see a play button at the top. Clic it to Run your project.
- You will see a message at the bottom saying that Apache has started, and it will give you a url to see the result of this first program. Copy and paste it in a new tab.

Congratulations! You have runned your first PHP script.

Lets see how we can build an interactive website in this environment.

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PROJECT OVERVIEW

Card 2 of 9

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1 Are you excited about learning a new programming language? Let see first some important facts about PHP.

- PHP have been around since 1995
- PHP is installed in over 244 million websites and 2 million web servers
- 75% of Web 2.0 sites are built in PHP (like Facebook, Flickr, Wikipedia and Yahoo!)

2 Here is what you are going to learn.

- Some basic HTML, as usually PHP and HTML work together.
- Generating some `strings` with PHP.
- Doing some maths with programming.
- Using some tricks to do repeated task simpler through loops.
- Retriving some information through web forms.

3 Through these sushi cards you are going to build a Guess the Number game website.

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PROJECT OVERVIEW

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4 Lets understand some basics, from the example project you can find when you start Cloud 9.

```
<html><body>
<?php
// A simple web site in Cloud9 that runs through
Apache
// Press the 'Run' button on the top to start the
web server,
// then click the URL that is emitted to the Output
tab of the console


echo 'Hello world from Cloud9!';

?>
</body>
</html>
```

5 To ensure your code loads through a PHP Parser you need to use the `.php` extension

Caveates PHP Code in html has to be surronded by tags `<?php ... ?>`

PHP code can be place anywhere inside the file as long as you make use of the `<?php ?>` tags.

6 Text between `<` `>` caracters are called **HTML tags**. You will learn some of them. By now you just need to know that let display information correctly in a web browser.

7 You will see in many examples the usage of `//`. That is used to create comments for yourself and other programmers in your code. The interpreter will ignorate everything you put after those characters.

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PHP AS A WEBPAGE - OUTPUT

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1 It's time to display some instructions about our game to the users, so they know how to play the game.

2 Outputting text in php is done via the `echo` function.

The `echo` function is used to output content, in our case to the webpage. You can see in the original example the script was displaying 'Hello world from Cloud9'. Try changing this text and **reload** the website using the url Cloud 9 gave you.

> PHP is a language that also requires you to terminate the end of line with a `;`. This just singles to the language that you have finished the statement.
>
> Failing to use a semicolon will cause **SYNTAX errors** in PHP.

3 Now use what you've learned to display the instructions of the game. Change the actual line with the `echo` function with the following code.

```
echo "<h1>Guest number game!</h1>";
echo "Pick a number between 1 and 10.";
```

You have printed 2 lines in your website. You will have notice that the text from the first line is different from the second one. That is because we are using `h1` a **html tag** to define a title.

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PHP AS A WEBPAGE - OUTPUT

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4 Lets add another line to make world clear that this website was of your own creation.

```
    echo "<p><code>" . "Done by a cool ninja" .
</code></p>";
```

You can see here a couple of interesting things. This line has been built with different **strings**, each of them delimited by `"` character. We are using the `.` character to join these **strings**. This is going to be something important in the next Sushi card, by now it let you separate the strings in different lines.

There is another **html tag** very useful, `p` tag means that we are creating a new paragraph.

> Notice that you can use both `` ` `` and `"` characters for creating **strings**. We'll see that there are some differences of using one or other.

5 Considering all went well, the results should show as the output.

6 If you got an error, double check over your code. Make sure you are not missing any semi colons.

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PHP AS A WEBPAGE - VARIABLES

Card 4 of 9

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1 Variables are a way of storing a value for later use.

2 Lets tune the line in which we got credit about our work.

```
$author = "a cool ninja";
echo "Done by " . $author;
```

PHP will always use a $ sign at the start of its variables.

3 Feel free to change the text as you like. What do you expect to happen?

4 Variables can be of different types, you are not limited to just text, you can also use numbers (referred to as strings and integers).

There are many differnet **types** a variable can be, some examples:

- **string** - "Ma"
- **integer** - 1
- **boolean** - true / false

You wont be using these in this tutorial, but are just here for context.

- **arrays** - array(1,2,3,4,5)
- **double** - 1.00000002

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5

There isn't anything different you need to do when outputting different types. Lets change the instruction to be able to change the lower and higher number to use in the game through variables.

```
 $lower_number = 1;
 $higher_number = 10;
 echo "Pick a number between {$lower_number} and
{$higher_number}.";
```

You can see here a different way of displaying **variable** values in **strings**. There are multiple ways to join strings together in PHP the preferred method is to use `"{$variable}"`.

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PHP FUNCTIONS

Card 5 of 9

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1 Lets add another piece of logic to our game using variables. In the game user has to guest a number that is decided randomly by the computer. Lets create a variable and fill it with a **random** number.

```
$my_random_number = rand(1, 10);
```

We are using a **function** to get the random number `rand(1,10)`. Numbers are **parameters** that you can change so the choosen random number is between these two.

When you use a **function** you need to know what kind of variables and how many are required. If you write it wrongly you will have a **Warning** informing you about the error.

2 Try changing the numbers with the variables you created previosly and print the value of `$my_random_number` to see the value.

Every time you reload the website it will be different.

```
   $my_random_number = rand($lower_number,
$higher_number);
```

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PHP FUNCTIONS

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3 Have you notice that you have been using all the time another php function? **echo** is a function that allows you to print some information. Actually you can write it both ways:

```
echo $my_random_number;
echo($my_random_number);
```

4 Functions usually do complex things and return to you a simple value. So it's interesting to know some of them to make more powerful programs. In the following example we are going to add a line that display when our website was generated.

```
$date = date("r");
echo "My current time is {$date}";
```

The `"r"` string just tell the `date` function how we want to see the date. There are plenty of options, for example getting only the current hour or the day of the month. You can see the details in http://php.net/manual/en/function.date.php

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GET/POST PARAMETERS

Card 6 of 9

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1 In this section we are going to be explaining how to pass information between pages back and fourth through the server. Two common methods are GET and POST.

- **GET** Providing information through GET allows you to have an easy url that can be bookmarked and saved for later use.
- **POST** A method of providing information through a page securely.

We are going to use **GET** method to pass to our game the number we have guessed.

2 You can read this information in the page by using the `$_GET` variable array. These are language variables and are automatically setup for you.

Append this line to your code. Then reload your page.

```
print_r($_GET);
```

Now try appending this at the end of the **url** of your website: `/hello-world.php?guess=3`. This way you are creating a new variable with the value of 3. Now you will see that your website print something like:

```
Array ( [guess] => 3 )
```

3 The `$_GET` variable is key, value arrays of information. This means values are associated to a **key** inside the variable. Keys can be made up of either strings or integers.

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GET/POST PARAMETERS

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4 You can read the value by using the key.

```
$guess = $_GET['guess'];
```

5 Now you can print both the computer choosen number and the one choosen by the user.

```
 echo "<p>Your guess is {$guess}, correct number is
{$my_random_number}</p>";
```

6 To improve usability you can add a field in the game to enter the value. Append the following code after the `?>` tag.

```
<form method="get">
   <input name='guess'>
</form>
```

Now you can type the value in the field and hit enter.

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CONDITIONALS

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1

We can get more from our game if we make it to make decisions, here they come the **Conditionals**.

Conditionals are made up of an **expression** and **statement** blocks. Expressions are evaluated and if they equal `TRUE` then the code in the statement block is run.

```
<?php
    if($guess == $my_random_number) {
        echo "Great, you find out the number!";
    }
?>
```

2

Sometimes you need to also check for the oppersite of your expression. For this we can use the `else` keyword. This means if the first expression is false, the statement in the else block is run instead.

```
<?php
 if($guess == $my_random_number) {
   echo "Great, you've found the number!";
 } else {
   echo "You missed, try again!";
 }
?>
```

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3

Finally, sometimes you want to check more cases than just this or that. For this you can use the `elseif` keyword, which allows you to run another expression to see if that block evaluates true, leading to the statement block running.

```
<?php
 if($guess == $my_random_number) {
   echo "Great, you've found the number!";
 } elseif($guess > $higher_number) {
   echo "You missed, pick a lower number";
 } else {
   echo "You missed, try again!";
 }
?>
```

You can chain as many elseifs together as you want.

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SHARING VARIBLES

Card 8 of 9

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1 Game gives only an opportunity to find the number. That is mainly because we are generating the number that we have to find out every time the web is reloaded. But we can pass this secret number every time we reload, so we can have multiple tries. Modify your form to look like this:

```
 <form method="post">
     <input type="hidden" name="secret_number"
value="<?php echo $my_random_number; ?>" />
     <input name='guess'/>
 </form>
```

Notice that we have added a new input field that is **hidden**. And we have changed the method in which the form is sent, sending by **POST** you will not see the parameters in the url.

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SHARING VARIBLES

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2 Then we have to change the way we generate the random number and the way we get the picked number from the user.

```
 $my_random_number = $_POST['secret_number'];
 if(!$my_random_number) {
   $my_random_number = rand($lower_number,
$higher_number);
 }
 $guess = $_POST['guess'];
```

The `if` sentence checks if the variable has been passed through the form, if not a new number is generated.

3 If you want to limit the tries to a certain number you can create another variable and use some maths to decrease the number of available tries.

```
$tries = $_POST['tries'];
if(!is_null($tries)) {
  $tries = $tries - 1;
} else {
  $tries = 3;
}
echo "You have {$tries} tries left.";
```

4 Remember that you have also to add the field in the form.

```
<input type="hidden" name="tries" value="<?php echo
$tries; ?>" />
```

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FINAL ADJUSTMENTS

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1 Here is all the code of our game.

```
<html>
  <body>
    <?php
    echo "<h1>Guess number game!</h1>";
    $l_number = 1;
    $h_number = 10;

    // set game variables
    $s_number = $_POST['secret_number'];
    if(!$s_number) {
      $s_number = rand($l_number, $h_number);
    }
    $guess = $_POST['guess'];
    $tries = $_POST['tries'];
    if(!is_null($tries)) {
     $tries = $tries - 1;
    } else {
     $tries = 3;
    }
    echo "You have {$tries} tries left.";
    if ($guess) {
      echo "<p>Your guess is {$guess}. ";
      if($guess == $s_number) {
        echo "You've found the number!";
      } elseif($guess > $h_number) {
        echo "Pick a lower number";
      } else {
        echo "You missed, try again!";
      }
      echo "</p>";
```

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FINAL ADJUSTMENTS

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2

```
      } else {
        echo "Pick a number between {$l_number} and
{$h_number}.";
      }
 ?>
   <form method="post">
       <input type="hidden" name="secret_number"
value="<?php echo $s_number; ?>" />
       <input type="hidden" name="tries" value="<?
php echo $tries; ?>" />
       <input name='guess'/>
   </form>
 </body>
 </html>
```

3

Things you've learnt from the previous cards.

- **Text Output** - Talking to our users
- **Variables** - Remembering values for use later.
- **String concatenation** - Adding two different pieces of text together
- **GET / POST** - How to read information passed through the server
- **Conditional expression** - Checking conditions and performing actions if they are true

4

There are some things are are not working well yet. For example you should do something when you run out of tries.