Green Code Lab Challenge subject

Introduction

Hi girls and guys,

This year, Hulk Software (which motto is still "Go Green to beStrong"), has a lot of new challenging demands on providing green components and services. Among the many subjects, there is one the boss really likes : make more eco-efficient the famous pictures carrousels. Yes, the carrousel, the self scrolling picture zones on web sites and mobile apps. You now are expected to write a carousel that is a nice looking and functional than the others, but greener ! As usual, you are free to choose the technologies and ways to do, only efficiency and behaviour matter ! Your only input is a visual representation of the expected solution.

Connexion to your machine

Important elements

You are in possession of 4 elements:
[IP] : the IP Internet address of your machine
[LOGIN] : your login
[PASSWD] : your password
[PATH] : the path where your application need to be published

Access to your production machine

Your application should be placed on the production machine. You have SSH access to your machine, giving you access to both the console and the file system. Access is by using any standard SSH client. For example you can use:

For **Linux** :

- ssh et scp command (generally provided by default or with the ssh package)

For **Windows**, tools like :

- Putty (console access) : http://www.chiark.greenend.org.uk/~sgtatham/putty/
- WinSCP (File transfert) : http://winscp.net/eng/docs
- Tunnelier (console access and file transfert) : http://www.bitvise.com/ssh-client

You can log in using your [LOGIN] and your [PASSWD].

Administrator Mode

To allow you to access and optimize all the resources of the machine, you can have administrative rights. Just for that, in administrator mode, type the command:

```
su -
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and you are then administrator "root" of the machine. Then you have all the rights on the machine, including changing access rights and even the root password ...

Be careful : It is your sole responsibility. The technical team of the Green Code Lab Challenge should not be sought for a problem related to manipulation in administrator mode. Nevertheless, it will do its best to fix the problem, this can lead to destruction and re-creation in the initial state of the virtual machine (with deletion of any changes).

Web Adress

Your application will be available at http: // [IP] / [PATH]. The path already created on your machine, is a code that only you know. This will make your visible machine for you and for measuring machines, but not the other competitors, unless you want to communicate.

Subject

Here now come the time to discover what you will be working on:

Part 1 : Images Slideshow

Summary

The purpose of the challenge is to build a nice *Image Slideshow* embedable in a sample webpage (described in part 4). This slideshow will be displayed on desktops (PC, Mac, Linux) and Smartphones.

An Image Slideshow is basically an area where a presentation of a series of images are displayed in a prearranged sequence.
Each image is usually displayed for at least a few seconds, before it is replaced by the next image. The changes may be automatic and at regular intervals or they may be manually controlled.

Specifications

Your slideshow *must* implement the following characteristics :

- On desktop, the image size will be 900x360 px
- On mobile, the image size will be 320x128 px
- Images *must* automatically change every 3 seconds.
- The user *must* be able to display the previous / next image manually.
- The user *must* be able to know how many images are embedded in the slideshow
- The user *must* be able to display an image of his choice throught a navigation system (bullet points)
- The images *must* be displayed without any perceptible quality loss
- The automatic scroll *must* have the possibility to be paused and resumed
- On a mobile device, the user *must* be able to display the previous or the next slide throught a finger swipe action
- The slideshow *must* be able to display an image caption if there is any provided
- The slideshow *must* scroll with at least 2 different transition effects
- The slideshow *must* auto-pause when hovered by the mouse, focused by the keyboard or when a mobile user hold a finger on the image.

Webdesign

The following image is the representation of what your slideshow *must* look like.
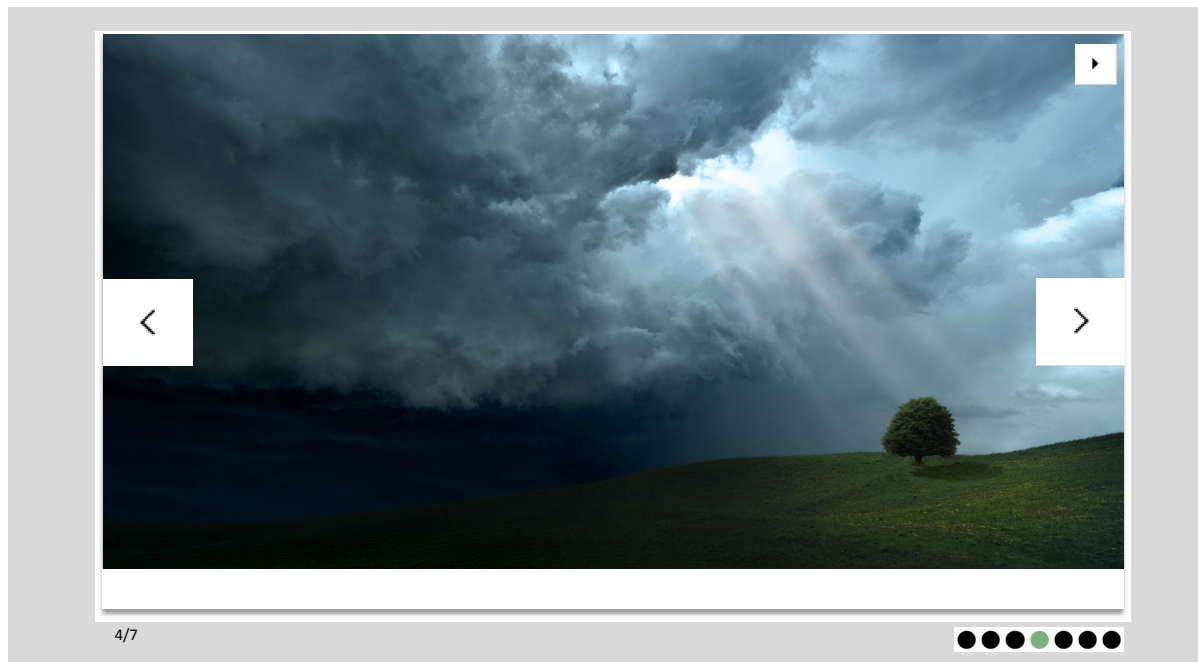
All elements are mandatory and specified in the files provided to you.

The mockup of the website is here :
https://drive.google.com/file/d/0BxyuwOB1WSWoaXZnZ2RWUXRGSlU/view?usp=sharing

Description file of images

Each picture has a description available in a property file. Its format is :

File naming :

<file name without extension>.prop

Content :

comment

comments begin with the # symbol

Description=string describing the picture or file

Part 2 (optional) : back-office

In this second part, we ask you to implement an « image providing service », which aims at feeding the images store with custom content (for back-office users).

The principle is simple : from a smartphone or a computer, one must be able to upload images to your server. The folder containing these images will be used as an input by the slideshow, in the same way as the shared folder containing pictures provided by the challenge organization. Thus, the slideshow will present a mix of images coming from both sources.

The upload must be done through a web page, reachable at the following address : http: // [IP] / [PATH] / backoffice / upload.

There are no restrictions on the mechanisms you could use to help the user choose the pictures to upload (file explorer, drag and drop, direct link with the camera…). There are no restrictions on the protocol you must use to upload the files to the server either.

One restriction still remains : the locations of the images on your server, at the following location : /var/www/backofficeimages/

Of course, to keep the spirit of the challenge, it is totally forbidden to use any online storage platform to host your images.

Part 3 : social networks

You will need to show the timeline of hashtag #gclchallenge. The refresh period must be a maximum of 30 seconds.

Part 4 : Webdesign

You will find in the provided materials a sample webpage here :
https://drive.google.com/file/d/0BxyuwOB1WSWoaXZnZ2RWUXRGSlU/view?usp=sharing

You *must not* :

- change the general look of the webpage
- change any text displayed by the webpage.

You are allowed to :

- Add text on the webpage
- Correct / modify the source code in any place, for anything that worth it
- Modify the twitter widget ; it must at least display the twits from #gclchallenge
- Add any style / javascripts / images you need

And of course, you *must* implement the slideshow on the webpage. Please embed it inside the <div> #slideshow.

Please note that the requirements may change during the challenge.

Technical elements

Images

Images are centralized on a server of the contest. They are read-only NFS mount via a pre-installed and configured on your virtual machine.

Images are accessible with the path /var/www/gclcimages/

This allows you to work on a common base image to all the teams, which may change during the competition.

Languages

You are completely free in the choice of languages, servers, middleware, etc. to complete the application.

Local usage

In keeping with the spirit of the contest and the concept of energy efficiency, all treatments must be done locally. Use an external resource (type Cloud) to perform the service will of course be disqualifying.

Like in the real world

Sometimes, clients or the marketing teams change of heart… The specification can change during the challenge… or not ;-)

Evaluation criteria

Your work will be assessed through measures that will be carried out by our servers. These criteria are fixed in advance. The objective is to validate several important aspects to eco-design: The least resource consumption, Open Innovation and collaboration, take into account mobile platforms.

Criteria explanation

Criteria 1 : Server energy

The optimization of the energy consumed by the server is important because it directly affects the consumption of a data center. Indeed, 1 Watt optimized on server will permit to ean 1.3 to 2.5 watts to the input of the data center.

The evaluation criterion is as follows : The number of points is the team's position in the ranking of teams (team with the smallest measurement: 100 points, the second team 99 points ...)

Criteria 2 : Computer Energy

The optimization of the energy consumed on client side affects consumption the user. It also impacts the obsolescence of platforms. The more the site is heavier, more energy it consumes.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the smallest measurement: 100 points, the second team 99 points ...)

Criteria 3 : Smartphone Energy

The optimization of the energy consumed on a smartphone directly impact on the autonomy of smartphone. It is therefore necessary to tailor the site based platforms.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the smallest measurement: 100 points, the second team 99 points ...)

Criteria 4 : Total Energy

Optimizations must consider all impacts and all users. This is why the overall energy impact will be taken into account. For this, the assumptions in terms of visitors will estimate the consumption divided between the server and all users.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams A formula used to estimate the overall consumption: Energy Energy Server + Client PC * Number of visitors / 2 + Energy Client * Number of visitors smartphone / 2 + (team with the smallest measurement: 400 points, the second team 96 points ...). This criterion more weight (max 400 points against 100 points for the classical criteria)

Criteria 5 : Page size

The page size dramatically impacts of elements: server, network and client. Plus there will be no element exchange, plus processing the page will be heavy.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the smallest measurement: 100 points, the second team 99 points ...)

Criteria 6 : Server memory

The server-side memory consumption is taken into account because it is one of the criteria sizing servers. More memory requirements, the higher the virtual machine will take up space on the physical server. The memory optimization will put more virtual machine on a physical machine.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the smallest measurement: 200 points, 2nd team: 198 Points ...) This criterion at a weighting high (max 200 points against 100 points for the classical criteria)

Criteria 7 : Computer memory

Client-side memory consumption is to be considered as the energy as it directly impacts the obsolescence of platforms.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the smallest measurement: 200 points, 2nd team: 198 Points ...). This criterion more weight (max 200 points against 100 points for the classical criteria)

Criteria 8 : Best practices number

Compliance with good programming practices can reduce the environmental debt of the application. Over the rules are followed, less resources will be used and smaller technical debt will be.

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the least number: 100 points, the second team 99 points ...)

Criteria 9 : dissemination of good practices

A good practice is good for your ranking. Indeed it will allow your application to use less energy and resource. But it's also good for your ranking if you broadcast to the other teams in the rankings. That is the open innovation. Free format: text document, video, blog post ... The content, however, must be complete enough for it to be applicable by the other teams ... and that good practice is not already disseminated.

The evaluation criterion is the following for tweets or short (<20 lines):

- Published Thursday : 10 points

- Published Friday morning: 5 points

- Published Friday afternoon : 0 point

The evaluation criterion is the following for items with content (> 20 lines):

- Published Thursday : 40 points

- Published Friday morning: 20 points

- Published Friday afternoon: 5 points

The theme is free : tools, good practice ...

Criteria 10 : Pre-challenge Communication

When sending the preliminary issue we asked you to raise your network on eco-design and GreenIT!

The evaluation criterion is as follows: The number of points is the team's position in the ranking of teams (team with the largest number of followers: 100 points, the second team 99 points ...)

<u>Criteria 11 : Best practices</u>

It is necessary to accurately describe best practices that you applied. Explained clearly green patterns, the gains ... The requested format is a slideshow of 10 to 40 pages.

This document will allow the jury to precisely check the results of the first 20 late challenge teams. If the measurement results, the site and the justification, the jury will give the right to change the points or to contact the team for details. Warning, this is an important document!

<u>Criteria 12 : Respect of the specification</u>

You must respect each functionality specified. If you don't respect a functionality, you will lose points :

- Part 1 (Each line of "Specifications", 12 functionalities) : 50 points by functionality
- Part 3 (social Networks) : 100 points
- Part 4 (webdesign) : 100 points

<u>Criteria 13 : Implementation of back office</u>

If you implement the back-office, you will have 100 points.

Validation tools

We use tools to evaluate your work:

- DC Scope from EasyVirt : This tool directly contacts the ESX server that hosts your virtual machines to retrieve all information about the server and its VMs. This allows us to obtain information such as energy consumption or memory or CPU in your server.

- Web Energy Archive : This tool contact your site for analysis via the URL. From this analysis, it will result various statistics such as electricity consumption on the client side, the type of hosted images, or the average byte used by the different components of the page (HTML, JavaScript, images, style, flash etc ..)

- JMeter : This tool performs simulates users and allows for load testing. Measurements of the energy carried by the server scope DC are recovered in the load test periods.

- GreenSpector : Greenspector audit the code for the client-side page and gives an ecodesign score based coding practices.

- Greenspector – Plugin smartphone : Greenspector measures the energy consumed by the site on smartphones.

Results publishing

The results are published regularly on the dashboard http://ranks.greencodelab-challenge.org/ :

The results are stored in the "Results History" menu

You can also access the timeline tests to see when the last tests were performed.

And the icing on the cake, #GCLC_Tester published on the Twitter account of the infoGreenCodeLab end tests

Questions

If you have any questions on the subject, testing, criteria ... Ask them to http://gclchallenge.forumactif.org/ We will respond at the earliest

We will do more regular tours via videoconferencing at all sites. This will be the time for you to go up some questions.

Also, do not hesitate to ask the other teams. The mutual aid is valued!

Dissemination of best pratices

Dissemination of good practices is done in two ways:

- Via social networks, blog posts ...

- Via the slides for the jury

For good practice sent during the competition, it is important to list them here: https://docs.google.com/forms/d/1abeRtsc0gbZMSTzSA_gd0vX0jc5PRCffoFsJkpWbNl4/viewform?c=0&w=1 as soon as you publish them. This allows us to give you the points!

For slides in the same way, you must put your slide on your site so that we can retrieve it quickly: http://goo.gl/forms/vqFft5tQ3o

Jury

Who will evaluate you (No School members !)

- Olivier Philippot (Green Code Lab / Kaliterre)
- Thierry Leboucq (Green Lab Center/ Kaliterre)
- Nicolas Panau (Umanit)
- Benjamin Tourman (Kaliterre)
- Romain Jacob (Sigma)
- Thomas Corvaisier (Kaliterre)
- Steven Morvan (Sigma)
- Benjamin Durand (Kaliterre)

Timing

Respect these deadlines, if you don't, you will be disqualified!

15:30 : End of work on server. If you push modification, measurement will be invalidate and you will not have any point !

15:30-16 : No more development but you can work on the slides.

16h-17h : You can rest. There will be animation and visio with all the sites

17h-17:30 : Closing speeches

17:30 : announcement of the winners

Some advices

1/ Your goal is to optimize the website in terms of resource consumption. So think good to all areas: memory, CPU, disk, network ...

2/ The impact of a site must be assessed globally. We must take into account all the impacts: the number of visitors, the server consumption ...

3/ Be open minded, do not stay on your skills. The software eco-design goes beyond such performance.

4/ Think you have finished the challenge, made all the optimizations. Take a break, step back ... and you will surely find a way to further reduce consumption.