



OWASP

Open Web Application
Security Project

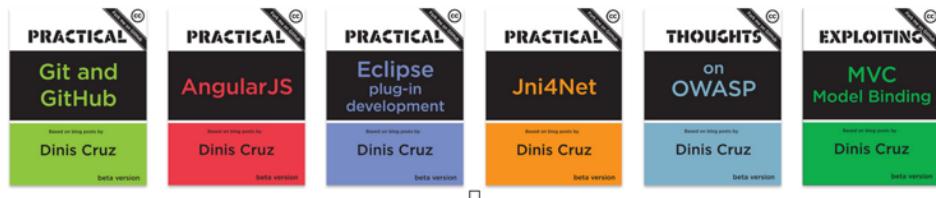
NodeJS Security Still unsafe at most speeds

@DinisCruz

London, 29th Sep 2016

Me

- Developer for 25 years
- AppSec for 13 years
- Day jobs:
 - Leader OWASP O2 Platform project
 - Application Security Training for JBI Training
 - Part of AppSec team of:
 - The Hut Group
 - BBC
- AppSec Consultant and Mentor
 - “I build AppSec teams....”
- <https://twitter.com/DinisCruz>
- <http://blog.diniscruz.com>
- <http://leanpub.com/u/DinisCruz>



Contact

- @Leanpub (get for 0\$)
- <http://leanpub.com/u/DinisCruz>



□

Recent Presentations (you might find interesting)



The slide features a blue background with a world map pattern. In the top right corner is the OWASP logo and text: "OWASP" in large letters, "Open Web Application Security Project" in smaller letters below it. A vertical gold bar is on the right side. The main text "Start with passing Tests (TDD for bugs)" is in yellow. At the bottom left is the text "London, 22nd Sep 2016, v0.5".

Start with passing Tests
(TDD for bugs)

London, 22nd Sep 2016, v0.5

<http://blog.diniscruz.com/2016/09/presentation-turning-tdd-upside-down.html>



The slide features a blue background with a world map pattern. In the top right corner is the OWASP logo and text: "OWASP" in large letters, "Open Web Application Security Project" in smaller letters below it. A vertical gold bar is on the right side. The main text "Using JIRA to manage Risks and Security Champions activities" is in yellow. At the bottom left is the text "OWASP AppSecEU, Rome, 2016".

Using JIRA to manage Risks and
Security Champions activities

OWASP AppSecEU, Rome, 2016

<http://blog.diniscruz.com/2016/09/presentation-turning-tdd-upside-down.html>



<http://blog.diniscruz.com/2016/05/appsec-and-software-quality.html>

AppSec and Quality

My thesis is that

Application Security can be used to
define and measure Software Quality

MODERN APPLICATION SECURITY

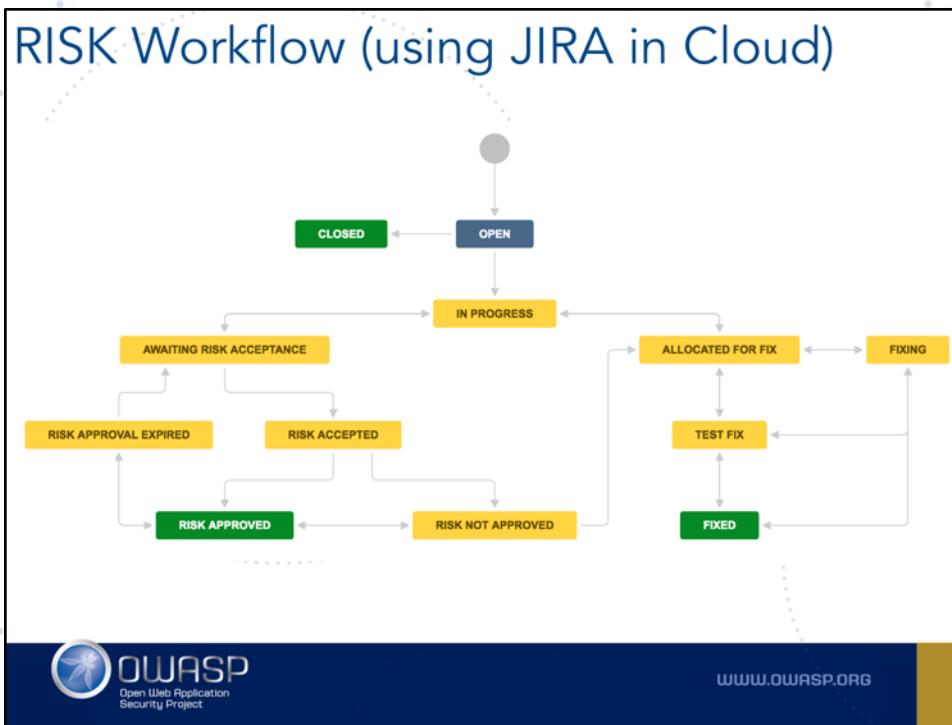
- TDD with Code Coverage
- Threat Models
- Docker and Containers
- Test Automation
- SAST/DAST/IAST/WAF
- Clever Fuzzing
- JIRA Risk workflows
- Kanban for Quality fixes
- Web Services visualisation
- ELK

TECHNICAL DEBT IS A BAD ANALOGY

- The developers are the ones who pays the debt
- Pollution is a much better analogy
- The key is to make the business accept the risk (i.e the debt)
- Which is done using the JIRA RISK Workflows

Key to AppSec - The AppSec Risk Workflow

RISK Workflow (using JIRA in Cloud)



<http://blog.diniscruz.com/2016/09/presentation-turning-tdd-upside-down.html>

Key for AppSec JIRA workflow is this button

Accept Risk

RISK - AppSec / RISK-3
Support for coffee file to create dynamic data sets allow RCE

Details

Type: Risk Priority: Medium Status: IN PROGRESS (New Workflow)
Resolution: Unresolved

Description

Related to #24, this is the feature that is currently used to create random data sets (for example on <http://localhost:3001/views/sem-random>). This means that if an attacker is able to edit an dataset (for example on the GitHub repo), he will have RCE on the server (when the team data is loaded). Note that at the moment only json files are supported for remote editing (see #20).

People

Assigned: Unassigned
Reporter: dina [Administrator]
Votes: 0
Watchers: 0
Stop watching this issue

Dates

Created: 2 minutes ago
Updated: Just now

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Start with Passing tests, because:

When creating tests on the '**Fix**' stage, the focus (& time allocated) is on
fixing the bug (not on testing it)

When creating tests on the '**Issue Creation**' stage, the focus (& time allocated) is on
how to test it and what is its root cause

<http://blog.diniscruz.com/2016/09/presentation-turning-tdd-upside-down.html>

NODEJS SECURITY



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Basically....

- Just as good and bad as Java or .NET
- We are still in the same place
- Not many lessons learned
- But at least we are building bigger and faster websites (with more house-power and assets)



What is good 1/3

- native JSON
- super fast
 - V8 Engine executed some javascript code faster than (equivalent) C++
- async pattern
 - one event loop thread
 - highly scalable
- developer friendly
 - fast development
 - REPL (Read, Eval, Print, Loop)
 - enables CI and CD (easy integration with GitHub, Travis, etc...)
- Other languages
 - ECMAScript 6
 - CoffeeScript (my favourite language)
 - Jade (HTML template engine)
 - Typescript



What is good 2/3

- community Innovation
 - pure Open Source child (with strong corporate support)
 - equivalent io.js fork should have happened to Java and .NET
 - crazy innovation speed and technologies like JsDOM
 - NodeJS Security Project
- ssl is easy
- enterprise ready
 - used by massive sites with great success
 - amazing live monitoring and instrumentation tools (and SaaS solution)
 - container friendly (i.e. docker)
- promotes Microservices
- great test culture (TDD)
- growing security maturity
 - null checks on file paths

What is good 3/3

- WallabyJS
 - real time unit test execution
 - real time code coverage

TDD in WebStorm with WallabyJS

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What happens when you increase attack surface

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You want a test to fail

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Just to be clear....

nodeJS + CoffeeScript + wallaby

is my most productive
and enjoyable dev environment

where I easily write
secure code with 100% code coverage



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www.owasp.org

What is bad 1/5

- Same old OWASP Top 10
- Have to work hard to write secure apps
 - not out of the box
 - CSRF protection for example
- REST Injection
 - can be as bad as SQL Injection
- Model Binding is alive



What is bad 2/5

- It's Javascript
 - not strongly typed
 - with crazy type conversions and equals
 - decimal conversion problems
 - ability to overwrite (via prototypes) other API's methods
 - interpreted code (strings can become code)
 - Eval, file save or 'dynamic requires' can lead to RCE
- Strings everywhere (we have to 'ban strings')
- Pattern: Proxy to internal Systems (with no data validation checks for more data)

What is bad 3/5

- NPM
 - just as bad and crazy as Maven, NuGet, CocoaPods
 - very little security checks performed in new modules
 - few security eyeballs
 - dependency checks via <https://nodesecurity.io/> via nsp
 - just look at what is inside some npm packages
 - See *I Peeked Into My Node_Modules Directory And You Won't Believe What Happened Next* <https://medium.com/friendship-dot-js/i-peeked-into-my-node-modules-directory-and-you-wont-believe-what-happened-next-b89f63d21558>

What is bad 4/5

- Unhandled errors will crash server (can be a good thing)
- Server side HTML and Javascript generation
 - source of tons of XSS
- Secure configuration is hard
- Weak code visualisation for
 - Attack surface
 - AST
 - Code Paths
- Limited support for sandboxing code and CAS (Code Access Security)

What is bad 5/5

- Hard to do SAST (Static Analysis)
- NoSQL databases vulnerable to Injection attacks
- Express support for ..%2f in url segments
- ... I'm sure there are many more ...

OWASP AND NODEJS



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OWASP Top 10 (for 2013) is all there

- A1 Injection
- A2 Broken Authentication and Session Management
- A3 Cross-Site Scripting (XSS)
- A4 Insecure Direct Object References
- A5 Security Misconfiguration
- A6 Sensitive Data Exposure
- A7 Missing Function Level Access Control
- A8 Cross-Site Request Forgery (CSRF)
- A9 Using Components with Known Vulnerabilities
- A10 Unvalidated Redirects and Forwards

OWASP Juice Shop Tool Project

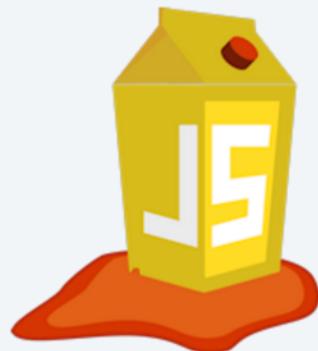


OWASP Juice Shop Tool Project

I The most trustworthy online shop out there. (dschadow)

OWASP Juice Shop is an intentionally insecure webapp for security trainings written entirely in Javascript which encompasses the entire [OWASP Top Ten](#) and other severe security flaws.

Description



Juice Shop is written in Node.js, Express and AngularJS. It was the first application written entirely in JavaScript listed in the [OWASP VWA Directory](#).

The application contains more than 30 challenges of varying difficulty where the user is supposed to exploit the underlying vulnerabilities. The hacking progress is tracked on a score board. Finding this score board is actually one of the (easy) challenges!

Apart from the hacker and awareness training use case, pentesting proxies or security scanners can use Juice Shop as a "guinea pig"-application to check how well their tools cope with Javascript-heavy application frontends and REST APIs.

I Translating "dump" or "useless outfit" into German yields "Saftladen" which can be reverse-translated word by word into "juice shop". Hence the project name.

[Donate](#)

Installation

[Packaged Distributions](#)

[Docker Image](#)

[Online Demo \(Heroku\)](#)

Source Code

[GitHub Project](#)

[Revision History](#)

[Crowdin I18N](#)

Support

[Documentation](#)

[Issue Tracker](#)

[Community Chat \(Gitter.im\)](#)



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OWASP NodeGoat Project



OWASP NodeGoat Project

OWASP NodeGoat project provides an environment to learn how OWASP Top 10 security risks apply to web applications developed using Node.js and how to effectively address them.

Introduction

Being lightweight and efficient, Node.js is rapidly becoming a platform of choice for building fast, scalable, data-intensive, modern web applications. However, developing stable and resilient web applications on this platform is very dependent on programmers due to its minimal default configuration and architecture choices. The goal of this project is to act as a learning resource demonstrating how OWASP Top 10 security risks apply to web applications developed using Node.js and how to effectively address them. It includes a vulnerable web application and accompanied tutorial guide.

Description

- Demo app: <http://nodegoat.herokuapp.com/>
- Project source code: <https://github.com/OWASP/NodeGoat>
- Gitter chat: <https://gitter.im/OWASP/NodeGoat>

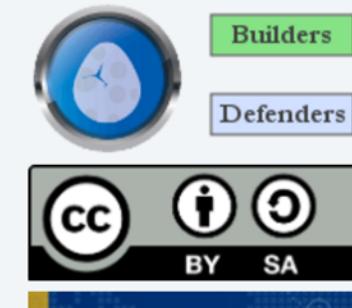
Project Leader

Chetan Karande

Quick Download

- Clone project Github repository at
<https://github.com/OWASP/NodeGoat>

Classifications



NodeJS Security Book



<https://secureyournodejs.com>



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KNOW THE RISK OF YOUR APPLICATION

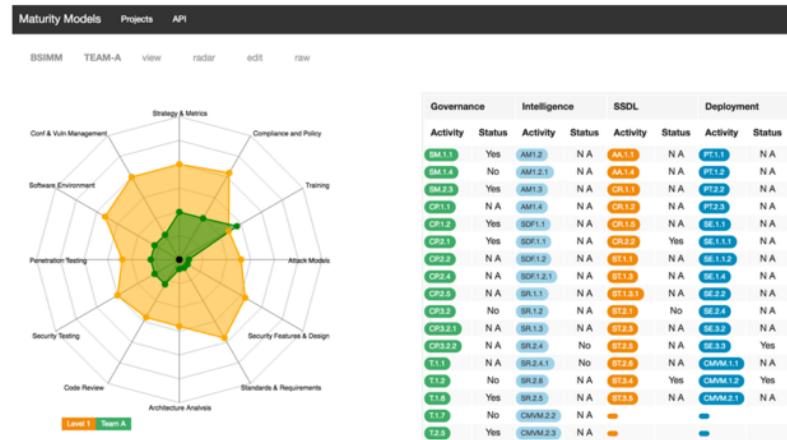


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View security issues as features

- You need to have them mapped and accept the risk
- Here are the risks currently accepted for the OWASP/Maturity-Models project (NodeJS app)



– <https://github.com/OWASP/Maturity-Models>

...using GitHub Labels to create Risk Workflow

The image displays three separate screenshots of GitHub repository label panes, each showing a different set of labels and their colors:

- Screenshot 1:** Labels include "A1 - Injection" (grey), "risk - accepted" (orange), and "security" (red).
- Screenshot 2:** Labels include "A1 - Injection" (grey), "risk - medium" (yellow), "risk - to fix" (light orange), and "security" (red).
- Screenshot 3:** Labels include "A1 - Injection" (grey), "risk - fixed" (green), "risk - medium" (yellow), and "security" (red).



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0 Open ✓ 24 Closed

Author ▾ Labels ▾ Milestones ▾ Assignee ▾ Sort ▾

- ⚠ Add support for SSL** A6 - Sensitive Data Exposure risk - accepted risk - medium security test needed #8 by DinisCruz was closed on Jun 8
- ⚠ Add security tests for lack of SSL** risk - accepted security test needed #9 by DinisCruz was closed on Jun 8
- ⚠ There is no Authentication and Authorization** A2 - Broken Authentication risk - accepted risk - low security #16 by DinisCruz was closed on Jun 3
- ⚠ There is no data classification of assets used** A6 - Sensitive Data Exposure risk - accepted risk - low security #17 by DinisCruz was closed on Jun 8
- ⚠ Api-Controller - filename is a string and it is not validated** risk - accepted security test needed #18 by DinisCruz was closed on Jun 8
- ⚠ Write regression test to prove that Data-Files.find method is not vulnerable to A1-Injection** A1 - Injection risk - accepted security test needed #22 by DinisCruz was closed on Jun 8
- ⚠ Data_Files.set_File_Data - DoS via file_Contents** A1 - Injection risk - accepted risk - low security #26 by DinisCruz was closed on Jun 3
- ⚠ All server logs are exposed via API** A6 - Sensitive Data Exposure risk - accepted risk - low security test needed #30 by DinisCruz was closed on Jun 8



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- **⌚ Server web root (i.e. path) is exposed by API** A6 - Sensitive Data Exposure risk - accepted risk - low
security test needed
#31 by DinisCruz was closed on Jun 8
- **⌚ All data can be modified by web users** A2 - Broken Authentication risk - accepted risk - medium
test needed
#35 by DinisCruz was closed on Jun 8
- **⌚ Data is not saved automatically on local and QA server** P1 risk - accepted risk - medium
test needed
#36 by DinisCruz was closed on Jun 8
- **⌚ duplicate team names are allowed and file list is not able to handle them** bug risk - accepted
#65 by DinisCruz was closed on Jun 13 1
- **⌚ Support for coffee file to create dynamic data sets allow RCE** A1 - Injection risk - accepted
security
#69 by DinisCruz was closed on Jun 13 3
- **⌚ Project list gets data from File System and allows DoS (with large amounts of requests)** A11 - DoS risk - accepted security
#72 by DinisCruz was closed on Jun 13 3
- **⌚ There is no Threat Model for this application** risk - accepted risk - medium security
#106 by DinisCruz was closed on Jul 7
- **⌚ DoS on Data-Project technique to map projects and project's teams** A11 - DoS risk - accepted
risk - low security
#108 by DinisCruz was closed on Jul 8

- ⌚ App will have issues if hosted in a multi-process environment bug risk - accepted
#122 by DinisCruz was closed on Jul 10
- ⌚ There is no Attack Detection or 'AppSensor like' capabilites risk - accepted risk - low security
#133 by DinisCruz was closed on Jul 11
- ⌚ Users are able to delete teams risk - accepted risk - medium security
#137 by DinisCruz was closed on Jul 14
- ⌚ There is a CSRF vuln on Add and Delete teams invalid risk - accepted risk - high security
#138 by DinisCruz was closed on Jul 14
- ⌚ Application has no ability to set file based permissions for Data repos P2 risk - accepted
risk - medium security test needed
#145 by DinisCruz was closed on Jul 20
- ⌚ App is vulnerable to "AngularJS Sandbox Bypass Collection" risk - accepted risk - medium
security
#153 by DinisCruz was closed 13 days ago
- ⌚ set_File_Data does not provide detailed information on why it failed risk - accepted risk - low
security
#155 by DinisCruz was closed on Aug 11
- ⌚ Application is able to write to App root risk - accepted risk - medium security
#156 by DinisCruz was closed on Aug 11



CASE STUDY: WHEN I CREATED A VULNERABILITY



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Feature request: Allow data editing on UI

- Here is the code I wrote (at the Data Layer)

```
56     set_File_Data: (filename, file_Contents) ->
57         if not filename or not file_Contents
58             return null
59         if typeof file_Contents isnt 'string'
60             return null
61         file_Path = @.find filename
62         if file_Path is null or file_Path.file_Not_Exists()
63             file_Path = @.data_Path.path_Combine filename
64         file_Path.file_Write file_Contents
65         return file_Path
```

- This method is designed to be called by the controller (i.e. rest api endpoint):

Data_Files.set_File_Data - Path Traversal #19

Closed

DinisCruz opened this issue 27 days ago · 2 comments



DinisCruz commented 27 days ago • edited

Owner



Current implementation of Data_Files.set_File_Data ([here](#) and below) is vulnerable by design to an [Path Traversal](#) attack.

This will allow any caller to write into files outside the expected [data folder](#)

```
set_File_Data: (filename, file_Contents) ->
    if not filename or not file_Contents
        return null
    if typeof file_Contents isnt 'string'
        return null
    file_Path = @.find filename
    if file_Path is null or file_Path.file_Not_Exists()
        file_Path = @.data_Path.path_Combine filename
    file_Path.file_Write file_Contents
    return file_Path
```



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Regression test that passes on issue

```
describe '_securtiy | A1 - Injection', >

  # https://github.com/DinisCruz/BSIMM-Graphs/issues/21
  it 'Issue 19 - Data_Files.set_File_Data - Path Traversal', >
    using new Data_Files(), >
      folder_Name  = 'outside-data-root'
      file_Name    = 'some-file.txt'
      file_Content = 'some content'
      target_Folder = @.data_Path.path_Combine('../' + folder_Name)           # Create target
                                         .folder_Create()
                                         .assert_Folder_Exists()

      target_Folder.path_Combine(file_Name)                                     # Create target
                                         .file_Write(file_Content)
                                         .assert_File_Exists()

      payload      = ".../#{folder_Name}/#{file_Name}"
      new_Content  = 'new - content'

      @.data_Path.path_Combine(payload)                                         # Confirm origin
                                         .file_Contents().assert_Is file_Content

      @.set_File_Data payload, new_Content

      @.data_Path.path_Combine(payload)                                         # Confirm origin
                                         .file_Contents().assert_Is_Not file_Content
                                         .assert_Is new_Content                                         # Confirm that :

      target_Folder.folder_Delete_Recursive().assert_Is_True()                  # Delete temp fo
```



Data_Files.set_File_Data - DoS via filename #20

 Closed

DinisCruz opened this issue 27 days ago · 1 comment



DinisCruz commented 27 days ago • edited

Owner



As seen in #19 the `set_File_Data: (filename, file_Contents)` method does not check the size (and contents) of the filename and file_Contents variables.

The problem is that they are strings, which means that they can be huge:

- <http://appsandsecurity.blogspot.co.uk/2013/05/should-string-be-abstract-class.html>
- http://1raindrop.typepad.com/1_raindrop/2013/04/security-140-conversation-with-john-wilander.html
- https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/String
- <http://stackoverflow.com/questions/2219526/how-many-bytes-in-a-javascript-string>
- <http://stackoverflow.com/questions/24153996/is-there-a-limit-on-the-size-of-a-string-in-json-with-node-js>

And since those values are used to on the name and contents of files written on disk, in addition to possible probs in the Node Heap, this function can be used to fill up the disk

Here is the test for this issue which proves that we can create large files and also detects some weird behaviours on the file name size (which is different in wallaby, mocha and travis)



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```

it.only 'Issue 20 - Data_Files.set_File_Data - DoS via filename and file_Contents', ->
  using new Data_Files(), ->
    create_File = (file_Size, content_Size, should_Work)=>
      file_Name    = file_Size .random_String()
      file_Contents = content_Size.random_String()
      file_Path    = @.data_Path .path_Combine(file_Name)

      file_Path.assert_File_Not_Exists()                                # confirm file doesn't exist

      @.set_File_Data file_Name, file_Contents                         # PAYLOAD: create file

      if should_Work
        file_Path.assert_File_Exists()                                 # if it should work
        file_Path.file_Delete().assert_Is_True()                      #   confirm file exists
        file_Path.assert_File_Not_Exists()                            #   delete temp file
      else
        file_Path.assert_File_Not_Exists()                            # if not
                                                                #   confirm creation failed

# testing multiple file sizes
create_File 10 ,10 , true
create_File 100,10 , true
create_File 156,10 , true
#create_File 157,10 , false                                     # interesting in wallaby, at
#create_File 208,10 , false                                     #           in mocha, it's
create_File 512,10 , false                                     #           in travis the

# testing multiple file contents
create_File 10 ,10 , true                                     # 10 bytes
create_File 10 ,100 , true                                    # 100 bytes
create_File 10 ,10000 , true                                  # 10 Kb
create_File 10 ,1000000 , true                               # 1 Mb
create_File 10 ,10000000 , true                             # 10 Mb - will work and take
create_File 10 ,100000000 , true                            # 100 Mb - will work and ta

```



Data_Files.set_File_Data - allows creation of files with any extension #23

 Closed

DinisCruz opened this issue 27 days ago · 1 comment



DinisCruz commented 27 days ago • edited

Owner + 

Related to [#19](#) and [#20](#), at the moment there is no limitations on the type of files that can be saved.

According with the current design, the only file paths that should be supported are `.json` files

Here is the test that proves the issue

```
it 'Issue 23 - Data_Files.set_File_Data - allows creation of files with any extension', -
  using new Data_Files(), ->
    create_File = (extension)=>
      file_Name    = 10.random_String() + extension
      file_Contents = 10.random_String()
      file_Path    = @.data_Path .path_Combine(file_Name)

      @.set_File_Data file_Name, file_Contents          # PAYLOAD: create file

      file_Path.assert_File_Exists()                    # confirm file exists
      .file_Delete().assert_Is_True()                  # delete temp file

      create_File '.json'                            # these are the ones that sh
      create_File '.json5'                           # these are the ones that sh
      create_File '.coffee'
      create_File '.js'
      create_File '.exe'
      create_File '.html'
      create_File '.css'
      create_File '...'
```



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Data_Files.set_File_Data - allows editing of coffee-script files (RCE) #24

[Edit](#)[New Issue](#)**Closed**

DinisCruz opened this issue 27 days ago · 3 comments



DinisCruz commented 27 days ago · edited

Owner



Related to #23 it will be possible to do RCE on the server by editing one of the existing data coffee-scripts files (for example the one used to create random data)

Here is the code from `Data-Files` that creates the security issue, note how the file is updated and the code is executed

```
it 'Issue 24 - Data_Files.set_File_Data - allows editing of coffee-script files (RCE)', ->

  using new Data_Files(), ->
    # PREPARE
    new_File_Contents = 'module.exports = ()-> 40+2'
    file_Name        = 'coffee-data'
    file_Path        = @.find_File file_Name
    file_Contents   = file_Path.file_Contents()
    @.get_File_Data(file_Name).user.assert_Is 'in coffee'          # confirm original data

    # TEST
    @.set_File_Data file_Name, new_File_Contents
    file_Path.file_Contents().assert_Is new_File_Contents
    delete require.cache[file_Path]
    @.get_File_Data(file_Name).assert_Is '42'

    # CLEAN
    @.set_File_Data file_Name, file_Contents
    file_Path.file_Contents().assert_Is file_Contents
    delete require.cache[file_Path]
    @.get_File_Data(file_Name).user.assert_Is 'in coffee'

    # PAYLOAD make change
    # confirm it was changed
    # clean the node cache
    # it should be 42 now (v)
    # restore file contents
    # confirm it was reset
    # clear the cache again
    # confirm original data
```

Labels

risk - fixed

risk - high

security

Milestone

No milestone

Assignees

No one—assign yourself

1 participant



Notifications

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You're receiving notifications because you modified the open/close state.

[Lock conversation](#)**OWASP**

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Fix for Path transversal



DinisCruz commented 27 days ago • edited

Owner



This has now been fixed.

Here is the updated version of this method that doesn't have the path traversal issue

```
set_File_Data: (filename, file_Contents) ->

    if not filename or not file_Contents                      # check if both values are set
        return null

    if typeof file_Contents isnt 'string'                   # check if file_Contents is a strin
        return null

    file_Path = @.find_File filename                         # resolve file path based on file r
                                                                # check if was able to resolve it
    if file_Path is null or file_Path.file_Not_Exists()      # check if was able to resolve it
        return null

    file_Path.file_Write file_Contents
```



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Regression test

For reference here is the regression test that confirms that it is not possible to write to files outside the data folder:

```
describe '_regression | A1 - Injection', ->

  # https://github.com/DinisCruz/BSIMM-Graphs/issues/21
  it 'Issue 19 - Data_Files.set_File_Data - Path Traversal', ->
    using new Data_Files(), ->
      folder_Name = 'outside-data-root'
      file_Name   = 'some-file.txt'
      file_Content = 'some content'
      target_Folder = @.data_Path.path_Combine('...' + folder_Name)           # Create target
      .folder_Create()
      .assert_Folder_Exists()          # Confirm it exists

      target_Folder.path_Combine(file_Name)                                     # Create target
      .file_Write(file_Content)
      .assert_File_Exists()          # Confirm it exists

      payload      = "...#{folder_Name}/#{file_Name}"
      new_Content = 'new - content'

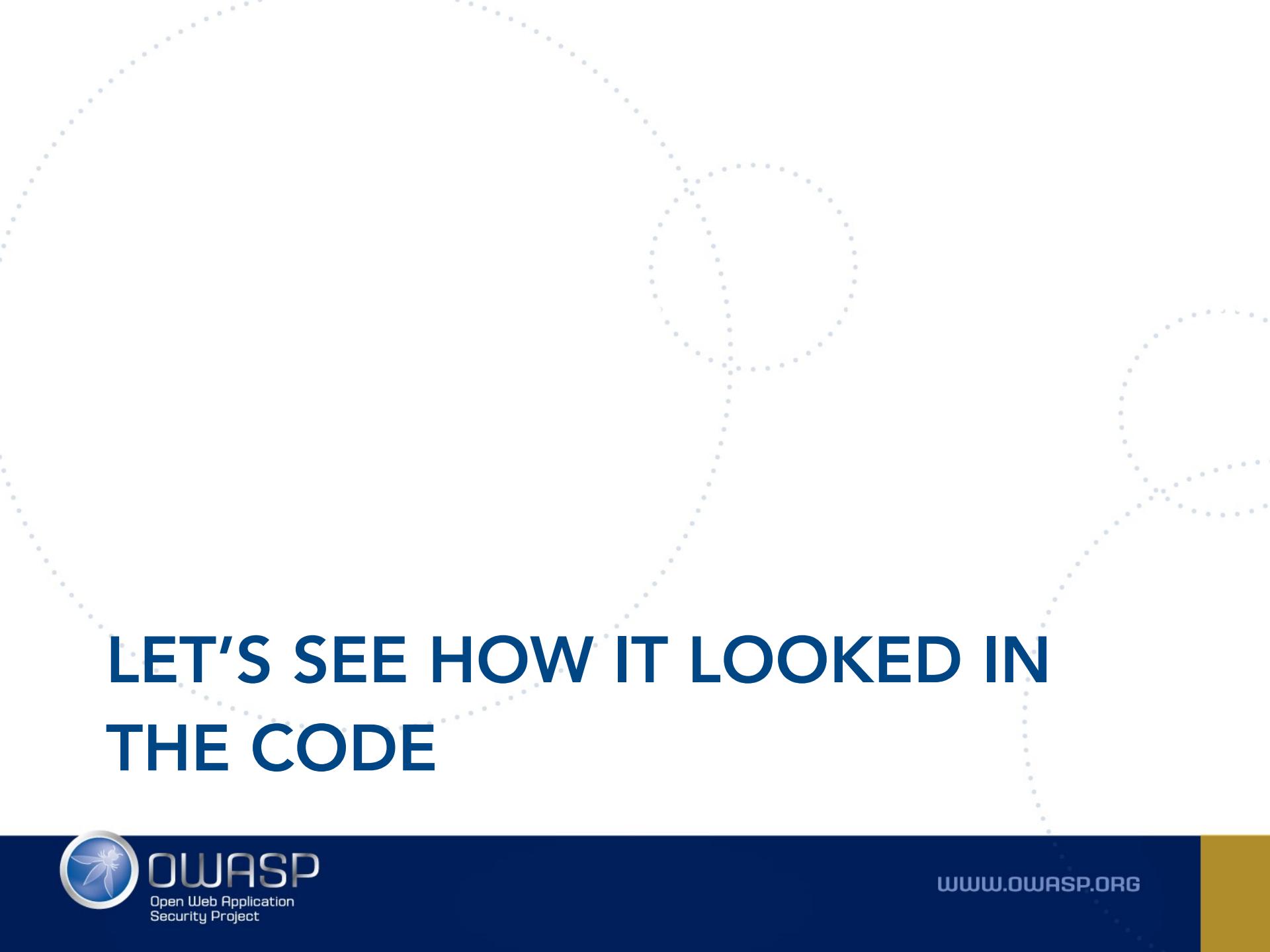
      @.data_Path.path_Combine(payload)
      .file_Contents().assert_Is file_Content          # Confirm original content

      assert_Is_Null @.set_File_Data payload, new_Content          # PAYLOAD: Create

      @.data_Path.path_Combine(payload)
      .file_Contents().assert_Is file_Content          # Confirm original content

      target_Folder.folder_Delete_Recursive().assert_Is_True()          # Delete temp fo
```





**LET'S SEE HOW IT LOOKED IN
THE CODE**



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...before the vuln is created

```
51 #set_File_Data: fileName
52
53 list: ()=>
54   @.files().file_Names()
55
56 files: =>
57   values = []
58   for file in @.data_Path.files_Recursive()
59     if file.file_Extension() in ['.json', '.json5', '.coffee']
60       values.push file.remove(@.data_Path)
61   values
--
```



...when the vuln is created

```
56     set_File_Data: (filename, file_Contents) ->
57         if not filename or not file_Contents
58             return null
59         if typeof file_Contents isnt 'string'
60             return null
61         file_Path = @.find filename
62         if file_Path is null or file_Path.file_Not_Exists()
63             file_Path = @.data_Path.path_Combine filename
64         file_Path.file_Write file_Contents
65         return file_Path
```



... adding comments

```
56 set_File_Data: (filename, file_Contents) ->
57   if not filename or not file_Contents
58     return null
59   if typeof file_Contents isnt 'string'
60     return null
61   file_Path = @.find filename
62   if file_Path is null or file_Path.file_Not_Exists()
63     file_Path = @.data_Path.path_Combine filename
64   file_Path.file_Write file_Contents
65   return file_Path

# todo: add security issue: that this method will allow the writing
#       of any file (not just the files in the data
#       folder, which are the ones that should be edited)

# todo: add security issue: filename is not validated

# todo: add security issue: directory transvesal
# todo: add security issue: no authorization, will write outside d
```



...after issues are created

```
54 # Issue 19 - Data_Files.set_File_Data - Path Traversal
55 # Issue 20 - Data_Files.set_File_Data - DoS via filename and file_Contents
56 # Issue 23 - Data_Files.set_File_Data - allows creation of files with any extension
57 set_File_Data: (filename, file_Contents) ->
58     if not filename or not file_Contents
59         return null
60     if typeof file_Contents isnt 'string'
61         return null
62     file_Path = @.find filename
63     if file_Path is null or file_Path.file_Not_Exists()
64         file_Path = @.data_Path.path_Combine filename
65     file_Path.file_Write file_Contents
66     return file_Path
```



...improving comments

```
54 # Issue 19 - Data_Files.set_File_Data - Path Traversal
55 # Issue 20 - Data_Files.set_File_Data - DoS via filename and file_Contents
56 # Issue 23 - Data_Files.set_File_Data - allows creation of files with any extension
57 set_File_Data: (filename, file_Contents) ->
58
59     if not filename or not file_Contents          # check if both values are set
60         return null
61
62     if typeof file_Contents isnt 'string'        # check if file_Contents is a string
63         return null
64
65     file_Path = @.find_File filename             # resolve file path based on file name
66
67     if file_Path is null or file_Path.file_Not_Exists() # check if was able to resolve it
68         return null
69
70     file_Path.file_Write file_Contents
    .....-
```



...updating issues after 1st fix

```
60 # Issue 24 - Data_Files.set_File_Data - allows editing of coffee-script files (RCE)
61 # Issue 25 - Refactor set_File_Data to Set_File_Data_JSON
62 # Issue 26 - Data_Files.set_File_Data - DoS via file_Contents
63 set_File_Data: (filename, file_Contents) ->
64
65   if not filename or not file_Contents          # check if both values are set
66     return null
67
68   if typeof file_Contents isnt 'string'        # check if file_Contents is a string
69     return null
70
71   file_Path = @.find_File filename              # resolve file path based on file name
72
73   if file_Path is null or file_Path.file_Not_Exists() # check if was able to resolve it
74     return null
75
76   file_Path.file_Write file_Contents
    * * * * *
```

... after final fix

```
60 # Issue 26 - Data_Files.set_File_Data - DoS via file_Contents
61 set_File_Data_Json: (filename, json_Data) ->
62
63     if not filename or not json_Data                      # check if both values are set
64         return null
65
66     if typeof json_Data isnt 'string'                   # check if file_Contents is a string
67         return null
68
69     try                                                 # confirm that json_Data parses OK into JSON
70         JSON.parse json_Data
71     catch
72         return null
73
74     file_Path = @.find_File filename                     # resolve file path based on file name
75
76     if file_Path is null or file_Path.file_Not_Exists() # check if was able to resolve it
77         return null
78
79     if file_Path.file_Extension() isnt '.json'          # check that the file is .json
80         return null
81
82
83     file_Path.file_Write json_Data                     # after all checks save file
84
85     return file_Path.file_Contents() is json_Data      # confirm file was saved ok
```



... more issues where found later

```
# Issue 26 – Data_Files.set_File_Data – DoS via file_Contents
# Issue 121 – Race condition on set_File_Data_Json method
# RISK-5: set_File_Data does not provide detailed information on why it failed – https://maturity-models.atl…

set_Team_Data_Json: (project, team, json_Data) ->
  if not team or not json_Data                                # check if both values are set
    return null

  if typeof json_Data isnt 'string'                          # check if json_Data is a string
    return null

  try                                                       # confirm that json_Data parses OK into JSON
    JSON.parse json_Data
  catch
    return null

  file_Path = @.team_Path project, team                      # resolve team path based on team name

  if file_Path is null or file_Path.file_Not_Exists() # check if was able to resolve it
    return null

  if file_Path.file_Extension() isnt '.json'                 # check that the team_Path file extension is .json
    return null
```



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Thanks, any questions

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