

OpenCerts



GOVTECH
SINGAPORE

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OVERVIEW / INTRODUCTION

OpenCerts is a platform using blockchain to provide an easy and reliable way to issue and validate tamper-proof certificates

How it works hash issuance....

```
},  
"privacy": {},  
"signature": {  
  "type": "SHA3MerkleProof",  
  "targetHash": "cbd224a72af5e0050bd58ab2264094cbacac0f19f7f430e347cad451ae8c590d",  
  "proof": [],  
  "merkleRoot": "cbd224a72af5e0050bd58ab2264094cbacac0f19f7f430e347cad451ae8c590d"  
}
```

One way hash

- Simplified hashing algorithm
 - Sum all numbers
 - Extract the Ones value

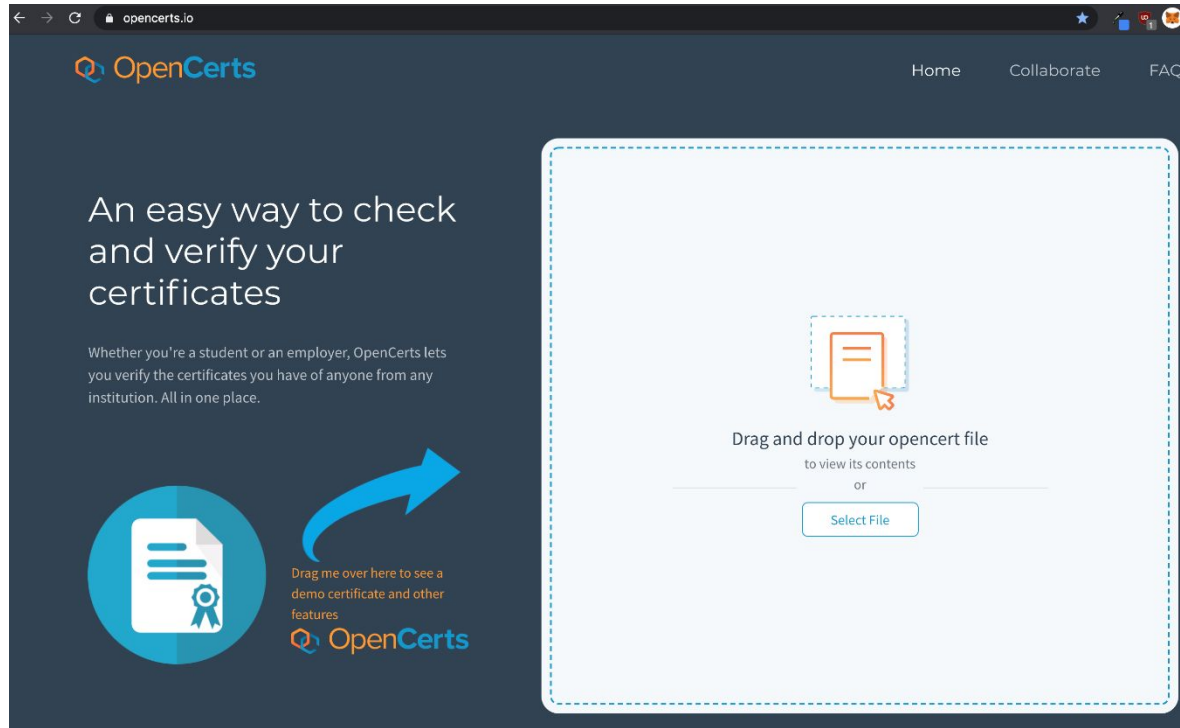
- Digit 1: 100
- Digit 2: 28
- $100 + 28 = 128$
- Hash value = 8



- Given Hash value = 8
- Cannot reverse to original numbers

Digit 1	Digit 2
1000000	256448
111111	777
123	345

OpenCerts.io




The screenshot shows the OpenCerts.io website. The browser address bar displays "opencerts.io". The website has a dark blue header with the "OpenCerts" logo on the left and navigation links for "Home", "Collaborate", and "FAQ" on the right. The main content area is dark blue and features the heading "An easy way to check and verify your certificates". Below this, a paragraph states: "Whether you're a student or an employer, OpenCerts lets you verify the certificates you have of anyone from any institution. All in one place." To the left of the main content is a circular icon containing a document with a ribbon seal. A blue arrow points from this icon to a large, light blue dashed-line box on the right. Inside this box, there is a document icon with a mouse cursor pointing to it, and the text "Drag and drop your opencert file to view its contents or" followed by a "Select File" button.

Verification



Additional Info

CERTIFICATE **TRANSCRIPT** MEDIA [View another](#)


OpenCerts Privacy Filter Enabled 
Edit this certificate by removing sensitive information by clicking on the edit button. Downloaded certificate remains valid!

Govtech Demo Certificate

NAME	: Your Name	DOCUMENT ID	: 53b75bbe
COURSE	: Govtech Demo	DATE OF	: MAY 2019
NRIC/FIN	: SXXXXXXXY	ISSUANCE	
STUDENT ID	: 123456	DATE OF	: AUG 2017
		ADMISSION	
		DATE OF	: AUG 2022
		GRADUATION	

Transcript

Course Code	Name	Grade	Units	Semester
CS 1110	Introduction to Programming	A+	3	1
CS 2110	Object Oriented Programming in Java	A+	4	1
ECON 3030	Microeconomics	A+	4	2
ECON 3040	Macroeconomics	A	4	2
ECON 3120	Econometrics	A-	4	2



Demo Signature
John Demo
Dean of Demos, Govtech

Tampering (1)

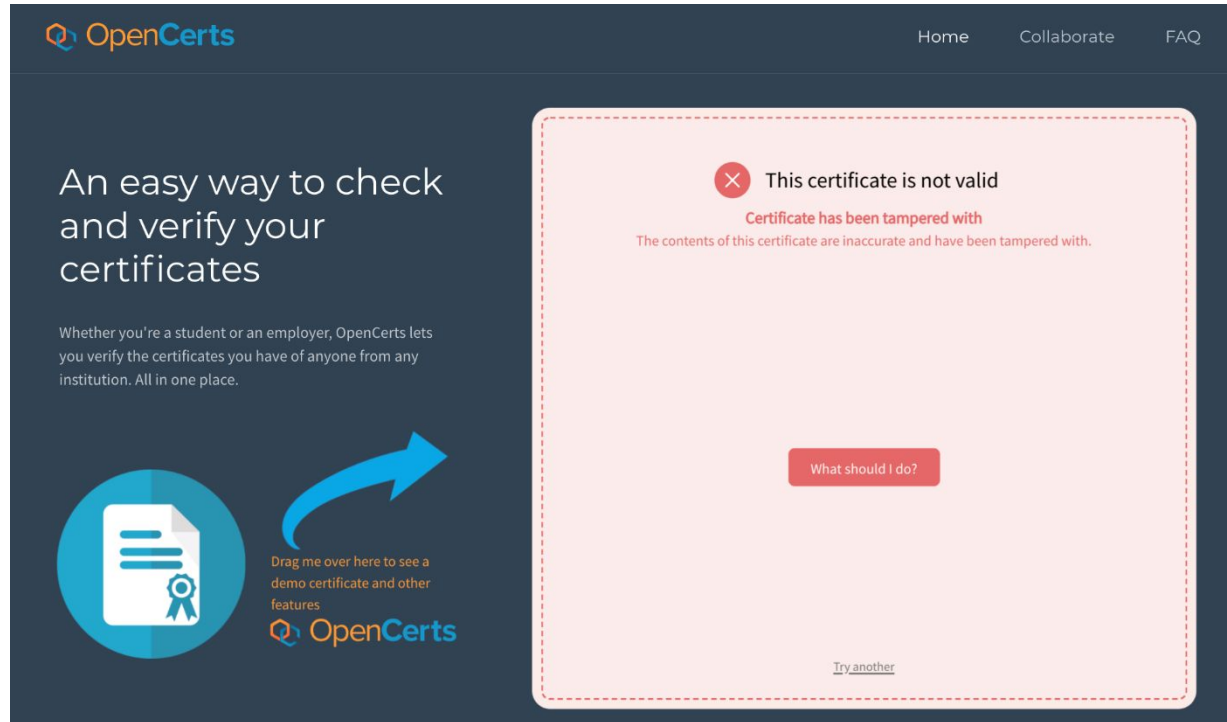
```
{  
  "name": "d50239be-963e-48d4-ba5f-c9bbc096eb9d:string:Econometrics",  
  "grade": "cbc52f57-b54a-4a22-90f5-3da13500c099:string:A-",  
  "courseCredit": "74d5d074-859a-472f-91a6-cd2807ae44a8:string:4",  
  "courseCode": "a098f8d1-db6c-436d-918b-4c0bbd4d9f1b:string:ECON 3120",  
  "examinationDate": "46e564b2-12e1-4ee6-b44a-9127130a029c:string:2018-05-01T00:00:00+08:00",  
  "semester": "25b73bc3-87e9-42d4-8c92-6e6a0f58e962:string:2"  
}
```

Original version

```
{  
  "name": "d50239be-963e-48d4-ba5f-c9bbc096eb9d:string:Econometrics",  
  "grade": "cbc52f57-b54a-4a22-90f5-3da13500c099:string:A+",  
  "courseCredit": "74d5d074-859a-472f-91a6-cd2807ae44a8:string:4",  
  "courseCode": "a098f8d1-db6c-436d-918b-4c0bbd4d9f1b:string:ECON 3120",  
  "examinationDate": "46e564b2-12e1-4ee6-b44a-9127130a029c:string:2018-05-01T00:00:00+08:00",  
  "semester": "25b73bc3-87e9-42d4-8c92-6e6a0f58e962:string:2"  
}
```

Tampered version

Tampering (2)



The screenshot shows the OpenCerts website interface. At the top left is the OpenCerts logo, and at the top right are navigation links for Home, Collaborate, and FAQ. The main content area on the left features the heading "An easy way to check and verify your certificates" and a sub-heading "Whether you're a student or an employer, OpenCerts lets you verify the certificates you have of anyone from any institution. All in one place." Below this is a circular icon of a certificate with a ribbon, and a blue arrow pointing to the right. Text next to the arrow says "Drag me over here to see a demo certificate and other features" followed by the OpenCerts logo. On the right side of the page, a large light pink box with a dashed border contains an error message: "This certificate is not valid" with a red 'X' icon, "Certificate has been tampered with" in red, and "The contents of this certificate are inaccurate and have been tampered with." Below the message is a red button that says "What should I do?" and at the bottom of the box is a link that says "Try another".

Resources

- Document Verification <https://opencerts.io>
- Documentation <https://docs.opencerts.io>
- Github Repository <https://github.com/OpenCerts>

Q&A



Thank you

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www.tech.gov.sg

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