Module sui::groth16

Represents an elliptic curve construction to be used in the verifier. Currently we support BLS12-381 and BN254. This should be given as the first parameter to prepare verifying key or verify groth16 proof.

A Prepared Verifying Key consisting of four components in serialized form.

A PublicProofInputs wrapper around its serialized bytes.

A **ProofPoints** wrapper around the serialized form of three proof points.

Return the <u>Curve</u> value indicating that the BLS12-381 construction should be used in a given function.

Return the Curve value indicating that the BN254 construction should be used in a given function.

Creates a **PreparedVerifyingKey** from bytes.

Returns bytes of the four components of the Prepared Verifying Key.

Creates a <u>PublicProofInputs</u> wrapper from bytes. The bytes parameter should be a concatenation of a number of 32 bytes scalar field elements to be used as public inputs in little-endian format to a circuit.

Creates a Groth16 ProofPoints from bytes.

@param curve: What elliptic curve construction to use. See $\underline{bls12381}$ and $\underline{bn254}$. @param verifying_key: An Arkworks canonical compressed serialization of a verifying key.

Returns four vectors of bytes representing the four components of a prepared verifying key. This step computes one pairing e(P, Q), and binds the verification to one particular proof statement. This can be used as inputs for the <u>verify groth16 proof</u> function.

Native functions that flattens the inputs into an array and passes to the Rust native function. May abort with ElnvalidVerifyingKey or ElnvalidVerifyin

@param curve: What elliptic curve construction to use. See the <u>bls12381</u> and <u>bn254</u> functions. @param prepared_verifying_key: Consists of four vectors of bytes representing the four components of a prepared verifying key. @param public_proof_inputs: Represent inputs that are public. @param proof points: Represent three proof points.

Returns a boolean indicating whether the proof is valid.

Native functions that flattens the inputs into arrays of vectors and passed to the Rust native function. May abort with $\underline{\text{EInvalidCurve}}$ or $\underline{\text{ETooManyPublicInputs}}$.

Struct

Represents an elliptic curve construction to be used in the verifier. Currently we support BLS12-381 and BN254. This should be given as the first parameter to prepare_verifying_key or verify_groth16_proof.

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A Prepared Verifying Key consisting of four components in serialized form
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Creates a <u>PreparedVerifyingKey</u> from bytes.
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Returns bytes of the four components of the <a href="PreparedVerifyingKey">PreparedVerifyingKey</a> .
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Creates a <u>PublicProofInputs</u> wrapper from bytes. The bytes parameter should be a concatenation of a number of 32 bytes scalar field elements to be used as public inputs in little-endian format to a circuit.

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### Struct

A <u>PreparedVerifyingKey</u> consisting of four components in serialized form
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A <u>PublicProofInputs</u> wrapper around its serialized bytes.
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Return the <u>Curve</u> value indicating that the BN254 construction should be used in a given function.
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@param curve: What elliptic curve construction to use. See the  $\underline{bls12381}$  and  $\underline{bn254}$  functions. @param prepared_verifying_key: Consists of four vectors of bytes representing the four components of a prepared verifying key. @param public_proof_inputs:

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Returns bytes of the four components of the Prepared Verifying Key.

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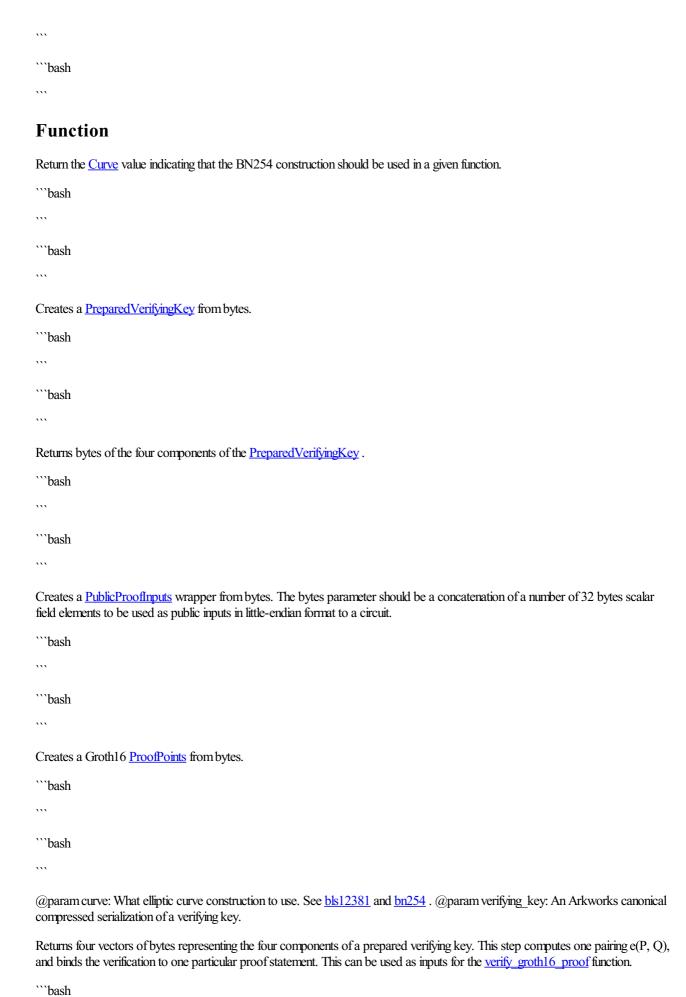
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| Creates a <u>PublicProofInputs</u> wrapper from bytes. The bytes parameter should be a concatenation of a number of 32 bytes scalar field elements to be used as public inputs in little-endian format to a circuit.                                                                                                                                                     |
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| Creates a Groth16 ProofPoints from bytes.                                                                                                                                                                                                                                                                                                                                |
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| Returns a boolean indicating whether the proof is valid.                                                                                                                                                                                                                                                                                                                 |
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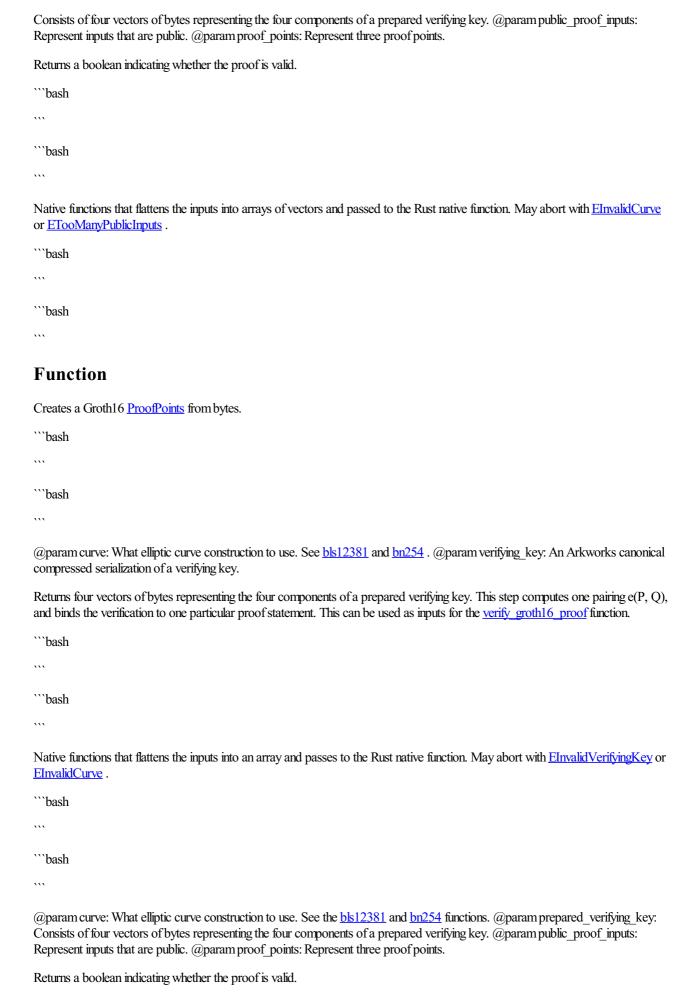
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# **Function**

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| Returns bytes of the four components of the PreparedVerifyingKey . |
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| Returns four vectors of bytes representing the four components of a prepared verifying key. This step computes one pairing e(P, Q) and binds the verification to one particular proof statement. This can be used as inputs for the werify_groth16_proof function. |
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| Native functions that flattens the inputs into an array and passes to the Rust native function. May abort with $\underline{EInvalidVerifyingKey}$ or $\underline{EInvalidCurve}$. |
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