

ASN.1 Brush for WordPress Syntax Highlighter Plugin

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Recently I wanted to include an example of some [ASN.1](#) (Abstract Syntax Notation) code in a WordPress blog using [Alex Gorbachev](#)'s excellent *SyntaxHighlighter* code syntax highlighter. SyntaxHighlighter uses separate syntax files called *brushes* to define its highlighting functionality. Unfortunately, I discovered that no brush was available for ASN.1 so I decided to write one.

Here is what I came up with:

```
//
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//
SyntaxHighlighter.brushes.ASN1 = function()
{
    var keywords = 'BOOLEAN INTEGER ENUMERATED REAL BIT STRING OCTET NULL ' +
        'EXTERNAL SET SEQUENCE OF CHOICE ANY OPTIONAL DEFAULT ' +
        'IDENTIFIER OBJECT IMPLICIT';
    var reserved = 'GeneralizedTime UTCTime ObjectDescriptor';
    this.regexList = [
        { regex: /-- .*$/gm, css: 'comments' },
    // comments
        { regex: new RegExp('::=', 'gm'), css: 'color3' },
        { regex: new XRegExp('\\[ \\d{1,} \\]', 'gm'), css: 'color3' },
    // explicit
        { regex: new XRegExp('\\(\\{\\s{1,}\\w{1,}\\s{1,}\\}\\)', 'gm'), css: 'color1' },
    // compiler action
        { regex: new RegExp(this.getKeywords(keywords), 'gm'), css: 'keyword' },
        { regex: new RegExp(this.getKeywords(reserved), 'gm'), css: 'color2' },
    ];
}
SyntaxHighlighter.brushes.ASN1.prototype = new SyntaxHighlighter.Highlighter();
SyntaxHighlighter.brushes.ASN1.aliases = ['asn1', 'ASN.1', 'asn.1'];
```

To use it, create a file called *sbBrushASN1.js*, containing the above code, in the *third-party-brushes* sub-directory under the Syntax Highlighter plugin directory. Typically this will be located at *BLOGNAME/wp-content/plugins/syntaxhighlighter*.

You then need to modify the file *syntaxhighlighter.php*. This file is located in the root directory of the Syntax Highlighter plugin. You need to add two lines to this file.

```
// Register the ASN1 brush under third party brushes
wp_register_script( 'syntaxhighlighter-brush-asn1',          plugins_url('syntaxhighlighter/
third-party-brushes/shBrushASN1.js'),          array('syntaxhighlighter-core'), '20121109' );
// add a line containing the ASN,1 brush alias to the $this->brushes array
// in the appropriate position (this array is sorted!)
'asn1' => 'asn1',
```

You do not need to disable and re-enable the Syntax Highlighter plugin. If it fails to work for you, you almost certainly have a typo somewhere.

Here is an example of some simple ASN.1 grammar which can be used to decode an [X.509](#) certificate:

```
--
-- X509 certificate
--
Certificate ::= SEQUENCE {
    tbsCertificate      TBSCertificate,
    signatureAlgorithm  AlgorithmIdentifier,
    signature           BIT STRING
}
TBSCertificate ::= SEQUENCE {
    version            [ 0 ] Version DEFAULT,
    serialNumber       CertificateSerialNumber,
    signature          AlgorithmIdentifier,
    issuer             Name,
    validity           Validity,
    subject            Name,
    subjectPublicKeyInfo SubjectPublicKeyInfo,
    issuerUniqueID    [ 1 ] IMPLICIT UniqueIdentifier OPTIONAL,
    subjectUniqueID   [ 2 ] IMPLICIT UniqueIdentifier OPTIONAL,
    extensions        [ 3 ] Extensions OPTIONAL
}
Version ::= INTEGER
CertificateSerialNumber ::= INTEGER
AlgorithmIdentifier ::= SEQUENCE {
    algorithm          OBJECT IDENTIFIER,
    parameters        ANY OPTIONAL
}
Name ::= SEQUENCE OF RelativeDistinguishedName
RelativeDistinguishedName ::= SET OF AttributeValueAssertion
AttributeValueAssertion ::= SEQUENCE {
    attributeType      OBJECT IDENTIFIER,
    attributeValue     ANY
}
Validity ::= SEQUENCE {
    notBefore          Time,
    notAfter           Time
}
Time ::= CHOICE {
    utcTime            UTCTime,
    generalTime        GeneralizedTime
}
SubjectPublicKeyInfo ::= SEQUENCE {
    algorithm          AlgorithmIdentifier,
    subjectPublicKey   BIT STRING
}
UniqueIdentifier ::= BIT STRING
Extensions ::= SEQUENCE OF Extension
Extension ::= SEQUENCE {
    extId              OBJECT IDENTIFIER,
    critical           BOOLEAN DEFAULT,
    extValue           OCTET STRING
}
}
```

Here is how the same ASN.1 grammar looks like using the ASN.1 brush:

```
-
- X509 certificate
-

Certificate ::= SEQUENCE {
    tbsCertificate TBSCertificate,
    signatureAlgorithm AlgorithmIdentifier,
```

```
signature BIT STRING
}

TBSCertificate ::= SEQUENCE {
  version [ 0 ] Version DEFAULT,
  serialNumber CertificateSerialNumber,
  signature AlgorithmIdentifier,
  issuer Name,
  validity Validity,
  subject Name,
  subjectPublicKeyInfo SubjectPublicKeyInfo,
  issuerUniqueID [ 1 ] IMPLICIT UniqueIdentifier OPTIONAL,
  subjectUniqueID [ 2 ] IMPLICIT UniqueIdentifier OPTIONAL,
  extensions [ 3 ] Extensions OPTIONAL
}

Version ::= INTEGER

CertificateSerialNumber ::= INTEGER

AlgorithmIdentifier ::= SEQUENCE {
  algorithm OBJECT IDENTIFIER,
  parameters ANY OPTIONAL
}

Name ::= SEQUENCE OF RelativeDistinguishedName

RelativeDistinguishedName ::= SET OF AttributeValueAssertion

AttributeValueAssertion ::= SEQUENCE {
  attributeType OBJECT IDENTIFIER,
  attributeValue ANY
}

Validity ::= SEQUENCE {
  notBefore Time,
  notAfter Time
}

Time ::= CHOICE {
  utcTime UTCTime,
  generalTime GeneralizedTime
}

SubjectPublicKeyInfo ::= SEQUENCE {
  algorithm AlgorithmIdentifier,
  subjectPublicKey BIT STRING
}

UniqueIdentifier ::= BIT STRING

Extensions ::= SEQUENCE OF Extension

Extension ::= SEQUENCE {
  extId OBJECT IDENTIFIER,
  critical BOOLEAN DEFAULT,
  extValue OCTET STRING
}
```

Feel free to use this Syntax Highlighter brush. There are not restrictions on it's use. However please keep the copyright notice and let me know if you improve the brush.