SE2052
IT23194144
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Video link: https://youtu.be/cdN_xY9tx0U
Or : https://youtu.be/cdN_xY9tx0U?si=ht_sNO7jYph1DQD2

EBNF Grammer for FormLang++

<form> ::= "form" <identifier> "{" [<meta_decl>] <section> { <section> } [<validation>] "}"

<meta_decl> ::= "meta" <identifier> "=" <string> ";"

<section> ::= "section" <identifier> "{" <field> { <field> } "}"

<field> ::= "field" <identifier> ":" <field_type> [<field_attributes>] ";"

<field_type> ::= "text" | "textarea" | "number" | "email" | "date" | "checkbox" | "dropdown"
| "radio" | "password" | "file"

<field_attributes> ::= <field_attribute> { <field_attribute> }

<field_attribute> ::= "required"
        | "pattern" "=" <string>
        | "default" "=" (<string> | <number> | "true" | "false")
        | "min" "=" <number>
        | "max" "=" <number>
        | "rows" "=" <number>
| "cols" "=" <number>
        | "accept" "=" <string>
        | "options" "=" "[" <option_list> "]"

<option_list> ::= <string> { "," <string> }

<validation> ::= "validate" "{" <condition> { <condition> } "}"

<condition> ::= "if" <expression> "{" "error" <string> ";" "}"

<expression> ::= <identifier> <operator> (<identifier> | <number>)

<operator> ::= "<" | ">" | "<=" | ">=" | "==" | "!="

<identifier> ::= <letter> { <letter> | <digit> }

<string> ::= "\"" { <character> } "\""

<number> ::= <digit> { <digit> }

<letter> ::= "A" | "B" | "C" | "D" | "E" | "F" | "G" | "H" | "I" | "J" | "K" | "L" | "M" |
        "N" | "O" | "P" | "Q" | "R" | "S" | "T" | "U" | "V" | "W" | "X" | "Y" | "Z" |
        "a" | "b" | "c" | "d" | "e" | "f" | "g" | "h" | "i" | "j" | "k" | "l" | "m" |
        "n" | "o" | "p" | "q" | "r" | "s" | "t" | "u" | "v" | "w" | "x" | "y" | "z"

<digit> ::= "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7" | "8" | "9"

<character> ::= <letter> | <digit> | <symbol> | <space>

<symbol> ::=

<space> ::= " "

Input 1
form ProductOrder {
 meta created = "2023-11-20";

 section CustomerInfo {
  field name: text required;
  field emailAddress: email required;
  field phone: text;
  field member: checkbox default=false;
 }

 section OrderDetails {
  field product: dropdown ["Laptop", "Phone", "Tablet"] required;
  field quantity: number min=1 max=10;
  field shipping: radio ["Standard", "Express"];
  field notes: textarea rows=3 cols=50;
 }

 validate {

```
    if quantity > 5 {
      error "Maximum 5 items per order";
    }
  }
}
```

the output HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Registration Form</title>
<link rel="stylesheet" href="styles.css">
</head>
<body>
<form name="ProductOrder">
 <label>Name: <input type="text" name="name" required></label><br>
 <label>EmailAddress: <input type="email" name="emailAddress"
required></label><br>
 <label>Phone: <input type="text" name="phone" ></label><br>
 <label><input type="checkbox" name="member" >Member</label><br>
 <label>Product: <select name="product">
  <option value="Laptop"">Laptop"</option>
  <option value="Phone"">Phone"</option>
  <option value="Tablet" required">Tablet" required</option>
 </select></label><br>
 <label>Quantity: <input type="number" name="quantity" min=1
max=10></label><br>
 <label>Shipping:</label><br>
 <input type="radio" name="shipping" value=""Standard""> "Standard"<br>
 <input type="radio" name="shipping" value=""Express""> "Express"<br>
 <label>Notes: <textarea name="notes" rows=3 cols=50></textarea></label><br>
 <script>if(document.forms['ProductOrder'].quantity > 5) { alert("Maximum 5 items per
order"); }</script>
</form>
</body>
</html>
```

Input 2

```
form RegistrationForm {
  meta author = "2025";

  section PersonalInfo {
    field fullName: text required pattern="[a-zA-Z ]{3,}" ;
    field userEmail: email required pattern="[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}";
    field birthYear: date required min=2010 max=2025;
    field bio: textarea rows=4 cols=50 default="Tell us about yourself";
  }

  section AccountSettings {
    field userPassword: password required pattern="[a-zA-Z0-9!@#$%^&*]{8,}";
    field loginRetries: number min=1 max=5 required;
    field twoFactorAuth: checkbox default=true;
    field profilePicture: file required;
  }

  section UserPreferences {
    field language: dropdown ["English", "Spanish", "French"];
    field notifications: radio ["Email", "SMS", "None"];
  }

  validate {
    if loginRetries < 5 { error "Login retries must be at least 5"; }
  }
}
```

Output HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Registration Form</title>
<link rel="stylesheet" href="styles.css">
</head>
<body>
<form name="RegistrationForm">
```

```html
<label>FullName: <input type="text" name="fullName" required pattern=[a-zA-Z ]{3,}></label><br>
<label>UserEmail: <input type="email" name="userEmail" required pattern=[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}></label><br>
<label>BirthYear: <input type="date" name="birthYear" required min=2010 max=2025></label><br>
<label>Bio: <textarea name="bio" rows=4 cols=50 value=Tell us about yourself></textarea></label><br>
<label>UserPassword: <input type="password" name="userPassword"required pattern=[a-zA-Z0-9!@#$%^&*]{8,}></label><br>
<label>LoginRetries: <input type="number" name="loginRetries" min=1 max=5 required></label><br>
<label><input type="checkbox" name="twoFactorAuth" checked>TwoFactorAuth</label><br>
<label>ProfilePicture: <input type="file" name="profilePicture" required></label><br>
<label>Language: <select name="language">
 <option value="English"">English"</option>
 <option value="Spanish"">Spanish"</option>
 <option value="French"">French"</option>
</select></label><br>
<label>Notifications:</label><br>
<input type="radio" name="notifications" value=""Email""> "Email"<br>
<input type="radio" name="notifications" value=""SMS""> "SMS"<br>
<input type="radio" name="notifications" value=""None""> "None"<br>
<script>if(document.forms['RegistrationForm'].loginRetries < 5) { alert("Login retries must be at least 5"); }</script>
</form>
</body>
</html>
~
```