HTML Checker dengan Pushdown Automata

LAPORAN TUGAS BESAR

Diajukan sebagai salah satu tugas mata kuliah Teori Bahasa Formal dan Otomata IF2124 Tahun 2023/2024

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DAFTAR ISI

BAB I
DESKRIPSI MASALAH

1.1. Deskripsi Umum HTML

Dalam pengembangan suatu *website*, HTML (Hypertext Markup Language) adalah bahasa yang digunakan untuk membangun struktur dasar suatu halaman *website*. Pada proses pembuatan halaman *website*, penting untuk memastikan bahwa kode HTML yang dibuat sesuai dengan aturan sintaks yang berlaku. Untuk memastikan kevalidan dan konsistensi struktur HTML, diperlukan suatu mekanisme pemeriksaan sintaks, dan salah satu pendekatan yang dapat digunakan adalah dengan menggunakan Pushdown Automata (PDA).

Pushdown Automata merupakan sebuah model komputasi teoritis yang dapat digunakan untuk mengenali bahasa kontekstual, termasuk bahasa yang dapat dihasilkan oleh grammar kontekstual seperti grammar yang mendefinisikan sintaks HTML.

Pada Tugas Besar ini, dibuat suatu sistem otomatis untuk memeriksa validitas sintaks HTML melalui pendekatan yang berfokus pada salah satu materi yang diajarkan pada Mata Kuliah Teori Bahasa Formal dan Otomata, yaitu Pushdown Automata. Dengan melibatkan konsep Pushdown Automata, sistem ini bertujuan untuk memastikan bahwa setiap dokumen HTML yang diuji sesuai dengan aturan sintaks yang ditetapkan, sehingga pengembangan sebuah *website* dapat lebih efisien dan terstruktur.

1.2. Tags HTML

Tags HTML yang kami validasi pada tugas besar ini tidak mencakup seluruh tags, hanya tag-tag pada tabel berikut.

Tag	Atribut Tambahan	Void Element	Catatan Tambahan
html	-		Tag html wajib ada Dokumen harus diawali tag html

head	-		Tag head wajib ada, Tag head harus berada di dalam tag html dan diatas tag body
body			Tag body wajib ada, Tag body harus berada di dalam tag html dan dibawah tag head. Semua elemen yang disebutkan setelah ini kecuali title harus berada di dalam body, namun tidak semua tag wajib ada di dalam body.
title			Hanya boleh berada dalam head
link	rel, href	v	Atribut rel wajib ada, dapat berada dalam head
script	src		dapat berada dalam head
h1, h2, h3, h4, h5, h6			
p			
br		V	
em			
b			
abbr			
strong			
small			
hr		V	
div			

|			
a	href		
img	src, alt	V	Atribut src wajib ada
button	type		Nilai attribute type dibatasi pada submit, reset, button
form	action, method		Nilai method harus dibatasi pada GET atau POST
input	type	V	Nilai attribute type harus dibatasi pada text, password, email, number, atau checkbox
table			Bentuk tabel tidak perlu diperhatikan (tidak apa-apa jika baris 1 terdiri dari 1 kolom sendangkan baris 2 terdiri dari 2 kolom)
tr			Tag tr harus berada dalam tag table
td			Tag td harus berada dalam tag table
th			Tag th harus berada dalam tag table

BAB II
LANDASAN TEORI

2.1   Pushdown Automata

Pushdown Automata (PDA) adalah jenis finite automata non-deterministik dengan kemampuan tambahan yaitu stack yang digunakan untuk menyimpan informasi dalam jumlah tak terbatas. Berbeda dengan komputer umum, PDA hanya dapat mengakses informasi pada tumpukannya dengan cara kerja Last In, First Out.
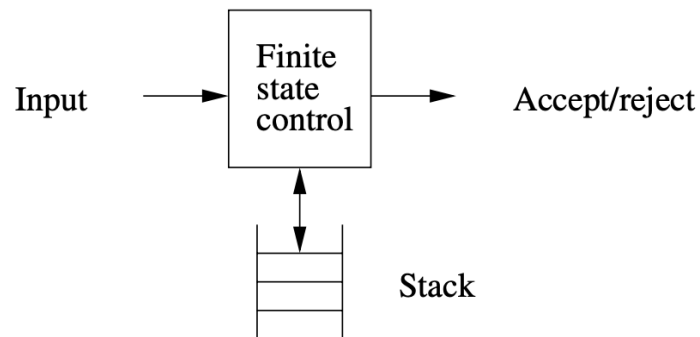
Gambar 1. Stack pada Pushdown Automata

Notasi untuk Pushdown Automata mencakup tujuh komponen, diantaranya termasuk diagram transisi yang merepresentasikan keadaan, transisi, dan operasi tumpukan. Notasi suatu PDA dapat dituliskan sebagai berikut:

$$P = (Q, \Sigma, \Gamma, \delta, q_0, Z_0, F)$$

dengan keterangan yaitu,

Q = kumpulan states pada PDA

Σ = simbol input

Γ = simbol stack

δ = fungsi transisi

qo = state awal

Z0 = stack awal

F = kumpulan final states

Penerimaan suatu bahasa pada Pushdown Automata dapat tercapai dengan dua cara, yaitu:

a. Penerimaan dengan Tumpukan Kosong (*Empty Stack*)

Seperti yang disebutkan sebelumnya, PDA memiliki satu komponen penting yang disebut dengan tumpukan (*stack*). Tumpukan ini digunakan untuk menyimpan informasi sementara selama pemrosesan string input. Sebuah PDA dikatakan menerima string input jika, setelah semua simbol dari string tersebut telah dibaca dan diproses, tumpukan menjadi kosong. *Empty stack* menunjukkan bahwa PDA telah berhasil memproses seluruh string input dan tidak ada simbol yang tersisa di tumpukan. Jika tumpukan kosong pada akhir pemrosesan, PDA dianggap menerima string tersebut.

b. Penerimaan dengan *Final State*

Sama seperti automata lainnya, PDA juga memiliki *state*. Dalam konteks *final state*, sebuah PDA dapat dikonfigurasi untuk memasuki suatu *final state* setelah membaca seluruh string input. Sebuah PDA dikatakan menerima string input jika, setelah membaca seluruh simbol dari string tersebut, PDA berada *final state*. *Final state* menandakan bahwa PDA telah mengenali string input sesuai dengan aturan dan transisi yang didefinisikan, dan berada dalam keadaan di mana pemrosesan input dianggap selesai.

2.2   Bahasa Pemrograman HTML (Hypertext Markup Language)

Hypertext Markup Language, atau biasa disebut HTML, adalah bahasa yang digunakan untuk membuat sekaligus mendesain suatu halaman *website* dengan menggunakan serangkaian elemen atau tag. HTML dijaga oleh World Wide Web

Consortium (W3C) dan spesifikasinya secara teratur diperbarui untuk memastikan konsistensi dan kompatibilitas di berbagai browser web.

HTML menyediakan berbagai cara untuk mengorganisir konten pada halaman *website*. Hal ini mencakup elemen untuk judul, paragraf, daftar, tautan, gambar, formulir, dan masih banyak lagi. Masing-masing dari serangkaian elemen ini didefinisikan oleh tag HTML. Tag berada di dalam tanda kurung sudut, dan kebanyakan hadir dalam pasangan. Pasangan disini berarti ia memiliki tag pembuka (< >) dan tag penutup (</ >), dimana konten ditempatkan diantara tag pembuka dan penutup.

Tag HTML dapat mencakup atribut yang memberikan informasi tambahan tentang elemen. Atribut ditambahkan ke tag pembuka dan biasanya berupa pasangan nama-nilai. Contoh:

```
<a
href="https://docs.google.com/document/d/1W5QSSHVrXvAr
j3Aonw4FhbfctBK6J2YGefXpWsLW43Y/"> Semangat TUBES
TBFO! </a>
```

dalam contoh ini, 'href' merupakan atribut yang menentukan referensi *hyperlink*.

Dokumen HTML biasanya memiliki struktur yang mencakup kepala (*head*) dan tubuh (*body*). Kepala berisi informasi mengenai dokumen, seperti judul, sedangkan tubuh berisi konten HTML yang sebenarnya. HTML sering digunakan bersama dengan Cascading Style Sheets (CSS) untuk gaya dan JavaScript untuk interaktivitas guna membuat situs *website* yang dinamis dan menarik secara visual.

3.1 State Pushdown Automata

Berikut adalah hasil Pushdown Automata yang telah kelompok kami buat untuk melakukan validasi terhadap sintaks *file* HTML.

```
(Current State, Input, Current-Top-of-Stack, Next-State, Stack)


START html Z0 HTML htmlZ0
HTML id= html HTMLATR ehtml
HTML class= html HTMLATR ehtml
HTML style= html HTMLATR ehtml
HTMLATR ' html SQUOTEHTML 'html
SQUOTEHTML ' ' HTML html
HTMLATR " html DQUOTEHTML "html
DQUOTEHTML " " HTML html
HTML head html HEAD headhtml
HTML /html html FINAL e
XBODY /html html FINAL e
HEAD id= head HEADATR ehead
HEAD class= head HEADATR ehead
HEAD style= head HEADATR ehead
HEADATR ' head SQUOTEHEAD 'head
SQUOTEHEAD ' ' HEAD head
HEADATR " head DQUOTEHEAD "head
DQUOTEHEAD " " HEAD head
HEAD title head TITLE titlehead
TITLE /title title HEAD e
HEAD script head SCRIPTHEAD scripthead
SCRIPTHEAD /script script HEAD e
SCRIPTHEAD src= script SCRIPTHEADATR escript
SCRIPTHEADATR " script DQUOTESCRIPTHEAD "script
DQUOTESCRIPTHEAD " " SCRIPTHEAD script
```

```
SCRIPTHEADATR ' script SQUOTESCRIPTHEAD 'script
SQUOTESCRIPTHEAD ' ' SCRIPTHEAD script
HEAD /head head XHEAD e
XHEAD body html BODY bodyhtml
XHEAD /html html FINAL e
BODY id= body BODYATR ebody
BODY class= body BODYATR ebody
BODY style= body BODYATR ebody
BODYATR " body DQUOTEBODY "body
DQUOTEBODY " " BODY body
BODYATR ' body SQUOTEBODY 'body
SQUOTEBODY ' ' BODY body
BODY /body body XBODY e
BODY script body SCRIPTBODY scriptbody
SCRIPTBODY /script script BODY e
SCRIPTBODY src= script SCRIPTBODYATR escript
SCRIPTBODYATR " script DQUOTESCRIPTBODY "script
DQUOTESCRIPTBODY " " SCRIPTBODY script
SCRIPTBODYATR ' script SQUOTESCRIPTBODY 'script
SQUOTESCRIPTBODY ' ' SCRIPTBODY script
BODY h1 body H1 h1body
H1 /h1 h1 BODY e
H1 id= h1 H1ATR eh1
H1 class= h1 H1ATR eh1
H1 style= h1 H1ATR eh1
H1ATR " h1 DQUOTEH1 "h1
DQUOTEH1 " " H1 h1
H1ATR ' h1 SQUOTEH1 'h1
SQUOTEH1 ' ' H1 h1
BODY h2 body H2 h2body
H2 /h2 h2 BODY e
H2 id= h2 H2ATR eh2
H2 class= h2 H2ATR eh2
H2 style= h2 H2ATR eh2
H2ATR " h2 DQUOTEH2 "h2
DQUOTEH2 " " H2 h2
H2ATR ' h2 SQUOTEH2 'h2
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```
SQUOTEH2 ' ' H2 h2
BODY h3 body H3 h3body
H3 /h3 h3 BODY e
H3 id= h3 H3ATR eh3
H3 class= h3 H3ATR eh3
H3 style= h3 H3ATR eh3
H3ATR " h3 DQUOTEH3 "h3
DQUOTEH3 " " H3 h3
H3ATR ' h3 SQUOTEH3 'h3
SQUOTEH3 ' ' H3 h3
BODY h4 body H4 h4body
H4 /h4 h4 BODY e
H4 id= h4 H4ATR eh4
H4 class= h4 H4ATR eh4
H4 style= h4 H4ATR eh4
H4ATR " h4 DQUOTEH4 "h4
DQUOTEH4 " " H4 h4
H4ATR ' h4 SQUOTEH4 'h4
SQUOTEH4 ' ' H4 h4
BODY h5 body H5 h5body
H5 /h5 h5 BODY e
H5 id= h5 H5ATR eh5
H5 class= h5 H5ATR eh5
H5 style= h5 H5ATR eh5
H5ATR " h5 DQUOTEH5 "h5
DQUOTEH5 " " H5 h5
H5ATR ' h5 SQUOTEH5 'h5
SQUOTEH5 ' ' H5 h5
BODY h6 body H6 h6body
H6 /h6 h6 BODY e
H6 id= h6 H6ATR eh6
H6 class= h6 H6ATR eh6
H6 style= h6 H6ATR eh6
H6ATR " h6 DQUOTEH6 "h6
DQUOTEH6 " " H6 h6
H6ATR ' h6 SQUOTEH6 'h6
SQUOTEH6 ' ' H6 h6
```

```
BODY p body P pbody
P /p p BODY e
P id= p PATR ep
P class= p PATR ep
P style= p PATR ep
PATR " p DQUOTEP "p
DQUOTEP " " P p
PATR ' p SQUOTEP 'p
SQUOTEP ' ' P p
P b p BOLD bp
BOLD /b b P e
P strong p STRONG strongp
STRONG /strong strong P e
P em p ITALIC emp
ITALIC /em em P e
P small p SMALL smallp
SMALL /small small P e
P br p P ep
BODY br body BODY ebody
BOLD br b BOLD eb
BOLD hr b BOLD eb
BOLD em b BOLDITALIC emb
BOLDITALIC /em em BOLD e
BOLD strong b BOLDSTRONG strongb
BOLDSTRONG /strong strong BOLD e
BOLDSTRONG em strong BOLDSTRONGITALIC emstrong
BOLDSTRONGITALIC /em em BOLDSTRONG e
BOLDSTRONG small strong BOLDSTRONGSMALL smallstrong
BOLDSTRONGSMALL /small small BOLDSTRONG e
BOLD small b BOLDSMALL smallb
BOLDSMALL /small small BOLD e
BOLDSMALL em small BOLDSMALLITALIC emsmall
BOLDSMALLITALIC /em em BOLDSMALL e
BOLDSMALL strong small BOLDSMALLSTRONG strongsmall
BOLDSMALLSTRONG /strong strong BOLDSMALL e
BOLDSTRONGITALIC small em BOLDSTRONGITALICSMALL smallem
BOLDSTRONGITALICSMALL /small small BOLDSTRONGITALIC e
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BOLDSTRONGSMALL em small BOLDSTRONGSMALLITALIC emsmall
BOLDSTRONGSMALLITALIC /em em BOLDSTRONGSMALL e
BOLDSMALLITALIC strong em BOLDSMALLITALICSTRONG strongem
BOLDSMALLITALICSTRONG /strong strong BOLDSMALLITALIC e
BOLDSMALLSTRONG em strong BOLDSMALLSTRONGITALIC emstrong
BOLDSMALLSTRONGITALIC /em em BOLDSMALLSTRONG e
ITALIC br em ITALIC eem
ITALIC hr em ITALIC eem
ITALIC b em ITALICBOLD bem
ITALICBOLD /b b ITALIC e
ITALICBOLD small b ITALICBOLDSMALL smallb
ITALICBOLDSMALL /small small ITALICBOLD e
ITALICBOLD strong b ITALICBOLDSTRONG strongb
ITALICBOLDSTRONG /strong strong ITALICBOLD e
ITALIC strong em ITALICSTRONG strongem
ITALICSTRONG /strong strong ITALIC e
ITALICSTRONG small strong ITALICSTRONGSMALL smallstrong
ITALICSTRONGSMALL /small small ITALICSTRONG e
ITALICSTRONG b strong ITALICSTRONGBOLD bstrong
ITALICSTRONGBOLD /b b ITALICSTRONG e
ITALIC small em ITALICSMALL smallem
ITALICSMALL /small small ITALIC e
ITALICSMALL strong small ITALICSMALLSTRONG strongsmall
ITALICSMALLSTRONG /strong strong ITALICSMALL e
ITALICSMALL b small ITALICSMALLBOLD bsmall
ITALICSMALLBOLD /b b ITALICSMALL e
ITALICBOLDSMALL strong small ITALICBOLDSMALLSTRONG strongsmall
ITALICBOLDSMALLSTRONG /strong strong ITALICBOLDSMALL e
ITALICBOLDSTRONG small strong ITALICBOLDSTRONGSMALL smallstrong
ITALICBOLDSTRONG /small small ITALICBOLDSTRONG e
ITALICSTRONGSMALL b small ITALICSTRONGSMALLBOLD bsmall
ITALICSTRONGSMALLBOLD /b b ITALICSTRONGSMALL e
ITALICSTRONGBOLD small b ITALICSTRONGBOLDSMALL smallb
ITALICSTRONGBOLDSMALL /small small ITALICSTRONGBOLD e
ITALICSMALLSTRONG b strong ITALICSMALLSTRONGBOLD bstrong
ITALICSMALLSTRONGBOLD /b b ITALICSMALLSTRONG e
ITALICSMALLBOLD strong b ITALICSMALLBOLDSTRONG strongb
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ITALICSMALLBOLDSTRONG /strong strong ITALICSMALLBOLD e
STRONG br strong STRONG estrong
STRONG hr strong STRONG estrong
STRONG b strong STRONGBOLD bstrong
STRONGBOLD /b b STRONG e
STRONGBOLD em b STRONGBOLDITALIC emb
STRONGBOLDITALIC /em em STRONGBOLD e
STRONGBOLD small b STRONGBOLDSMALL smallb
STRONGBOLDSMALL /small small STRONGBOLD e
STRONG em strong STRONGITALIC emstrong
STRONGITALIC /em em STRONG e
STRONGITALIC b em STRONGITALICBOLD bem
STRONGITALICBOLD /b b STRONGITALIC e
STRONGITALIC small em STRONGITALICSMALL smallem
STRONGITALICSMALL /small small STRONGITALIC e
STRONG small strong STRONGSMALL smallstrong
STRONGSMALL /small small STRONG e
STRONGSMALL b small STRONGSMALLBOLD bsmall
STRONGSMALLBOLD /b b STRONGSMALL e
STRONGSMALL em small STRONGSMALLITALIC emsmall
STRONGSMALLITALIC /em em STRONGSMALL e
STRONGBOLDITALIC small em STRONGBOLDITALICSMALL smallem
STRONGBOLDITALICSMALL /small small STRONGBOLDITALIC e
STRONGBOLDSMALL em small STRONGBOLDSMALLITALIC emsmall
STRONGBOLDSMALLITALIC /em em STRONGBOLDSMALL e
STRONGITALICBOLD small b STRONGITALICBOLDSMALL smallb
STRONGITALICBOLDSMALL /b b STRONGITALICBOLD e
STRONGITALICSMALL b small STRONGITALICSMALLBOLD bsmall
STRONGITALICSMALLBOLD /b b STRONGITALICSMALL e
STRONGSMALLBOLD em b STRONGSMALLBOLDITALIC emb
STRONGSMALLBOLDITALIC /em em STRONGSMALLBOLD e
STRONGSMALLITALIC b em STRONGSMALLITALICBOLD bem
STRONGSMALLITALICBOLD /b b STRONGSMALLITALIC e
SMALL br small SMALL esmall
SMALL hr small SMALL esmall
SMALL b small SMALLBOLD bsmall
SMALLBOLD /b b SMALL e
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SMALLBOLD strong b SMALLBOLDSTRONG strongb
SMALLBOLDSTRONG /strong strong SMALLBOLD e
SMALLBOLD em b SMALLBOLDITALIC emb
SMALLBOLDITALIC /em em SMALLBOLD e
SMALL em small SMALLITALIC emsmall
SMALLITALIC /em em SMALL e
SMALLITALIC b em SMALLITALICBOLD bem
SMALLITALICBOLD /b b SMALLITALIC e
SMALLITALIC strong em SMALLITALICSTRONG strongem
SMALLITALICSTRONG /strong strong SMALLITALIC e
SMALL strong small SMALLSTRONG strongsmall
SMALLSTRONG /strong strong SMALL e
SMALLSTRONG b strong SMALLSTRONGBOLD bstrong
SMALLSTRONGBOLD /b b SMALLSTRONG e
SMALLSTRONG em strong SMALLSTRONGITALIC emstrong
SMALLSTRONGITALIC /em em SMALLSTRONG e
SMALLBOLDSTRONG em strong SMALLBOLDSTRONGITALIC emstrong
SMALLBOLDSTRONGITALIC /em em SMALLBOLDSTRONG e
SMALLBOLDITALIC strong em SMALLBOLDITALICSTRONG strongem
SMALLBOLDITALICSTRONG /strong strong SMALLBOLDITALIC e
SMALLITALICBOLD strong b SMALLITALICBOLDSTRONG strongb
SMALLITALICBOLDSTRONG /strong strong SMALLITALICBOLD e
SMALLITALICSTRONG b strong SMALLITALICSTRONGBOLD bstrong
SMALLITALICSTRONGBOLD /b b SMALLITALICSTRONG e
SMALLSTRONGBOLD em b SMALLSTRONGBOLDITALIC emb
SMALLSTRONGBOLDITALIC /em em SMALLSTRONGBOLDITALIC e
SMALLSTRONGITALIC b em SMALLSTRONGITALICBOLD bem
SMALLSTRONGITALICBOLD /b b SMALLSTRONGITALIC e
BODY hr body BODY body
H1 hr h1 H1 h1
H2 hr h2 H2 h2
H3 hr h3 H3 h3
H4 hr h4 H4 h4
H5 hr h5 H5 h5
H6 hr h6 H6 h6
P hr p P p
BODY div body DIV divbody
```

```
DIV id= div DIVATR ediv
DIV class= div DIVATR ediv
DIV style= div DIVATR ediv
DIV /div div BODY e
DIVATR " div DQUOTEDIV "div
DQUOTEDIV " " DIV div
DIVATR ' div SQUOTEDIV 'div
SQUOTEDIV ' ' DIV div
DIV /div div BODY e
DIV p div PDIV pdiv
PDIV /p p DIV e
DIV h1 div H1DIV h1div
H1DIV id= h1 H1ATRDIV eh1
H1DIV class= h1 H1ATRDIV eh1
H1DIV style= h1 H1ATRDIV eh1
H1ATRDIV " h1 DQUOTEH1DIV "h1
DQUOTEH1DIV " " H1DIV h1
H1ATRDIV ' h1 SQUOTEH1DIV 'h1
SQUOTEH1DIV ' ' H1DIV h1
H1DIV /h1 h1 DIV e
DIV h2 div H2DIV h2div
H2DIV id= h2 H2ATRDIV eh2
H2DIV class= h2 H2ATRDIV eh2
H2DIV style= h2 H2ATRDIV eh2
H2ATRDIV " h2 DQUOTEH2DIV "h2
DQUOTEH2DIV " " H2DIV h2
H2ATRDIV ' h2 SQUOTEH2DIV 'h2
SQUOTEH2DIV ' ' H2DIV h2
H2DIV /h2 h2 DIV e
DIV h3 div H3DIV h3div
H3DIV id= h3 H3ATRDIV eh3
H3DIV class= h3 H3ATRDIV eh3
H3DIV style= h3 H3ATRDIV eh3
H3ATRDIV " h3 DQUOTEH3DIV "h3
DQUOTEH3DIV " " H3DIV h3
H3ATRDIV ' h3 SQUOTEH3DIV 'h3
SQUOTEH3DIV ' ' H3DIV h3
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H3DIV /h3 h3 DIV e
DIV h4 div H4DIV h4div
H4DIV id= h4 H4ATRDIV eh4
H4DIV class= h4 H4ATRDIV eh4
H4DIV style= h4 H4ATRDIV eh4
H4ATRDIV " h4 DQUOTEH4DIV "h4
DQUOTEH4DIV " " H4DIV h4
H4ATRDIV ' h4 SQUOTEH4DIV 'h4
SQUOTEH4DIV ' ' H4DIV h4
H4DIV /h4 h4 DIV e
DIV h5 div H5DIV h5div
H5DIV id= h5 H5ATRDIV eh5
H5DIV class= h5 H5ATRDIV eh5
H5DIV style= h5 H5ATRDIV eh5
H5ATRDIV " h5 DQUOTEH5DIV "h5
DQUOTEH5DIV " " H5DIV h5
H5ATRDIV ' h5 SQUOTEH5DIV 'h5
SQUOTEH5DIV ' ' H5DIV h5
H5DIV /h5 h5 DIV e
DIV h6 div H6DIV h6div
H6DIV id= h6 H6ATRDIV eh6
H6DIV class= h6 H6ATRDIV eh6
H6DIV style= h6 H6ATRDIV eh6
H6ATRDIV " h6 DQUOTEH6DIV "h6
DQUOTEH6DIV " " H6DIV h6
H6ATRDIV ' h6 SQUOTEH6DIV 'h6
SQUOTEH6DIV ' ' H6DIV h6
H6DIV /h6 h6 DIV e
DIV hr div DIV ediv
DIV abbr div ABBRDIV abbrdiv
ABBRDIV /abbr abbr DIV e
DIV br div DIV ediv
DIV strong div STRONGDIV strongdiv
STRONGDIV /strong strong DIV e
DIV em div ITALICDIV emdiv
ITALICDIV /em em DIV e
DIV small div SMALLDIV smalldiv
```

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SMALLDIV /small small DIV e
DIV b div BOLDDIV bdiv
BOLDDIV /b b DIV e
DIV div div NESTDIV divdiv
NESTDIV /div div DIV e
NESTDIV div div NESTDIV2 divdiv
NESTDIV /div div NESTDIV e
NESTDIV id= div DIVNESTATR ediv
NESTDIV class= div DIVNESTATR ediv
NESTDIV style= div DIVNESTATR ediv
DIVNESTATR " div DQUOTENESTDIV "div
DQUOTENESTDIV " " NESTDIV div
DIVNESTATR ' div SQUOTENESTDIV 'div
SQUOTENESTDIV ' ' NESTDIV div
NESTDIV2 id= div DIVNEST2ATR ediv
NESTDIV2 class= div DIVNEST2ATR ediv
NESTDIV2 style= div DIVNEST2ATR ediv
DIVNEST2ATR " div DQUOTENESTDIV "div
DQUOTENESTDIV " " NESTDIV2 div
DIVNEST2ATR ' div SQUOTENESTDIV 'div
SQUOTENESTDIV ' ' NESTDIV2 div
NESTDIV p div PNESTDIV pdiv
PNESTDIV /p p NESTDIV e
NESTDIV h1 div H1NESTDIV h1div
H1NESTDIV id= h1 H1ATRNESTDIV eh1
H1NESTDIV class= h1 H1ATRNESTDIV eh1
H1NESTDIV style= h1 H1ATRNESTDIV eh1
H1ATRNESTDIV " h1 DQUOTEH1NESTDIV "h1
DQUOTEH1NESTDIV " " H1NESTDIV h1
H1ATRNESTDIV ' h1 SQUOTEH1NESTDIV 'h1
SQUOTEH1NESTDIV ' ' H1NESTDIV h1
H1NESTDIV /h1 h1 NESTDIV e
NESTDIV h2 div H2NESTDIV h2div
H2NESTDIV id= h2 H2ATRNESTDIV eh2
H2NESTDIV class= h2 H2ATRNESTDIV eh2
H2NESTDIV style= h2 H2ATRNESTDIV eh2
H2ATRNESTDIV " h2 DQUOTEH2NESTDIV "h2
```

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DQUOTEH2NESTDIV " " H2NESTDIV h2
H2ATRNESTDIV ' h2 SQUOTEH2NESTDIV 'h2
SQUOTEH2NESTDIV ' ' H2NESTDIV h2
H2NESTDIV /h2 h2 NESTDIV e
NESTDIV h3 div H3NESTDIV h3div
H3NESTDIV id= h3 H3ATRNESTDIV eh3
H3NESTDIV class= h3 H3ATRNESTDIV eh3
H3NESTDIV style= h3 H3ATRNESTDIV eh3
H3ATRNESTDIV " h3 DQUOTEH3NESTDIV "h3
DQUOTEH3NESTDIV " " H3NESTDIV h3
H3ATRNESTDIV ' h3 SQUOTEH3NESTDIV 'h3
SQUOTEH3NESTDIV ' ' H3NESTDIV h3
H3NESTDIV /h3 h3 NESTDIV e
NESTDIV h4 div H4NESTDIV h4div
H4NESTDIV id= h4 H4ATRNESTDIV eh4
H4NESTDIV class= h4 H4ATRNESTDIV eh4
H4NESTDIV style= h4 H4ATRNESTDIV eh4
H4ATRNESTDIV " h4 DQUOTEH4NESTDIV "h4
DQUOTEH4NESTDIV " " H4NESTDIV h4
H4ATRNESTDIV ' h4 SQUOTEH4NESTDIV 'h4
SQUOTEH4NESTDIV ' ' H4NESTDIV h4
H4NESTDIV /h4 h4 NESTDIV e
NESTDIV h5 div H5NESTDIV h5div
H5NESTDIV id= h5 H5ATRNESTDIV eh5
H5NESTDIV class= h5 H5ATRNESTDIV eh5
H5NESTDIV style= h5 H5ATRNESTDIV eh5
H5ATRNESTDIV " h5 DQUOTEH5NESTDIV "h5
DQUOTEH5NESTDIV " " H5NESTDIV h5
H5ATRNESTDIV ' h5 SQUOTEH5NESTDIV 'h5
SQUOTEH5NESTDIV ' ' H5NESTDIV h5
H5NESTDIV /h5 h5 NESTDIV e
NESTDIV h6 div H6NESTDIV h6div
H6NESTDIV id= h6 H6ATRNESTDIV eh6
H6NESTDIV class= h6 H6ATRNESTDIV eh6
H6NESTDIV style= h6 H6ATRNESTDIV eh6
H6ATRNESTDIV " h6 DQUOTEH6NESTDIV "h6
DQUOTEH6NESTDIV " " H6NESTDIV h6
```

```
H6ATRNESTDIV ' h6 SQUOTEH6NESTDIV 'h6
SQUOTEH6NESTDIV ' ' H6NESTDIV h6
H6NESTDIV /h6 h6 NESTDIV e
NESTDIV hr div NESTDIV ediv
NESTDIV abbr div ABBRNESTDIV abbrdiv
ABBRNESTDIV /abbr abbr NESTDIV e
NESTDIV br div NESTDIV ediv
NESTDIV strong div STRONGNESTDIV strongdiv
STRONGNESTDIV /strong strong NESTDIV e
NESTDIV em div ITALICNESTDIV emdiv
ITALICNESTDIV /em em NESTDIV e
NESTDIV small div SMALLNESTDIV smalldiv
SMALLNESTDIV /small small NESTDIV e
NESTDIV b div BOLDNESTDIV bdiv
BOLDNESTDIV /b b NESTDIV e
NESTDIV2 p div PNESTDIV2 pdiv
PNESTDIV2 /p p NESTDIV2 e
NESTDIV2 h1 div H1NESTDIV2 h1div
H1NESTDIV2 id= h1 H1ATRNESTDIV2 eh1
H1NESTDIV2 class= h1 H1ATRNESTDIV2 eh1
H1NESTDIV2 style= h1 H1ATRNESTDIV2 eh1
H1ATRNESTDIV2 " h1 DQUOTEH1NESTDIV2 "h1
DQUOTEH1NESTDIV2 " " H1NESTDIV2 h1
H1ATRNESTDIV2 ' h1 SQUOTEH1NESTDIV2 'h1
SQUOTEH1NESTDIV2 ' ' H1NESTDIV2 h1
H1NESTDIV2 /h1 h1 NESTDIV2 e
NESTDIV2 h2 div H2NESTDIV2 h2div
H2NESTDIV2 id= h2 H2ATRNESTDIV2 eh2
H2NESTDIV2 class= h2 H2ATRNESTDIV2 eh2
H2NESTDIV2 style= h2 H2ATRNESTDIV2 eh2
H2ATRNESTDIV2 " h2 DQUOTEH2NESTDIV2 "h2
DQUOTEH2NESTDIV2 " " H2NESTDIV2 h2
H2ATRNESTDIV2 ' h2 SQUOTEH2NESTDIV2 'h2
SQUOTEH2NESTDIV2 ' ' H2NESTDIV2 h2
H2NESTDIV2 /h2 h2 NESTDIV2 e
NESTDIV2 h3 div H3NESTDIV2 h3div
H3NESTDIV2 id= h3 H3ATRNESTDIV2 eh3
```

```
H3NESTDIV2 class= h3 H3ATRNESTDIV2 eh3
H3NESTDIV2 style= h3 H3ATRNESTDIV2 eh3
H3ATRNESTDIV2 " h3 DQUOTEH3NESTDIV2 "h3
DQUOTEH3NESTDIV2 " " H3NESTDIV2 h3
H3ATRNESTDIV2 ' h3 SQUOTEH3NESTDIV2 'h3
SQUOTEH3NESTDIV2 ' ' H3NESTDIV2 h3
H3NESTDIV2 /h3 h3 NESTDIV2 e
NESTDIV2 h4 div H4NESTDIV2 h4div
H4NESTDIV2 id= h4 H4ATRNESTDIV2 eh4
H4NESTDIV2 class= h4 H4ATRNESTDIV2 eh4
H4NESTDIV2 style= h4 H4ATRNESTDIV2 eh4
H4ATRNESTDIV2 " h4 DQUOTEH4NESTDIV2 "h4
DQUOTEH4NESTDIV2 " " H4NESTDIV2 h4
H4ATRNESTDIV2 ' h4 SQUOTEH4NESTDIV2 'h4
SQUOTEH4NESTDIV2 ' ' H4NESTDIV2 h4
H4NESTDIV2 /h4 h4 NESTDIV2 e
NESTDIV2 h5 div H5NESTDIV2 h5div
H5NESTDIV2 id= h5 H5ATRNESTDIV2 eh5
H5NESTDIV2 class= h5 H5ATRNESTDIV2 eh5
H5NESTDIV2 style= h5 H5ATRNESTDIV2 eh5
H5ATRNESTDIV2 " h5 DQUOTEH5NESTDIV2 "h5
DQUOTEH5NESTDIV2 " " H5NESTDIV2 h5
H5ATRNESTDIV2 ' h5 SQUOTEH5NESTDIV2 'h5
SQUOTEH5NESTDIV2 ' ' H5NESTDIV2 h5
H5NESTDIV2 /h5 h5 NESTDIV2 e
NESTDIV2 h6 div H6NESTDIV2 h6div
H6NESTDIV2 id= h6 H6ATRNESTDIV2 eh6
H6NESTDIV2 class= h6 H6ATRNESTDIV2 eh6
H6NESTDIV2 style= h6 H6ATRNESTDIV2 eh6
H6ATRNESTDIV2 " h6 DQUOTEH6NESTDIV2 "h6
DQUOTEH6NESTDIV2 " " H6NESTDIV2 h6
H6ATRNESTDIV2 ' h6 SQUOTEH6NESTDIV2 'h6
SQUOTEH6NESTDIV2 ' ' H6NESTDIV2 h6
H6NESTDIV2 /h6 h6 NESTDIV2 e
NESTDIV2 hr div NESTDIV2 ediv
NESTDIV2 abbr div ABBRNESTDIV2 abbrdiv
ABBRNESTDIV2 /abbr abbr NESTDIV2 e
```

```
NESTDIV2 br div NESTDIV2 ediv
NESTDIV2 strong div STRONGNESTDIV2 strongdiv
STRONGNESTDIV2 /strong strong NESTDIV2 e
NESTDIV2 em div ITALICNESTDIV2 emdiv
ITALICNESTDIV2 /em em NESTDIV2 e
NESTDIV2 small div SMALLNESTDIV2 smalldiv
SMALLNESTDIV2 /small small NESTDIV2 e
NESTDIV2 b div BOLDNESTDIV2 bdiv
BOLDNESTDIV2 /b b NESTDIV2 e
BODY img body IMG ebody
IMG src= body IMGSRC ebody
IMGSRC " src= DQUOTEIMGSRC "body
DQUOTEIMGSRC " " BODY e
IMGSRC ' src= SQUOTEIMGSRC 'body
SQUOTEIMGSRC ' ' BODY e
IMG src= body IMGSRCATR ebody
BODY alt= src= IMGATR ebody
IMGSRCATR alt= src= IMGATR ebody
IMGATR " body DQUOTEIMGATR "body
DQUOTEIMGATR " " BODY e
IMGATR ' body SQUOTEIMGATR 'body
SQUOTEIMGATR ' ' BODY e
HEAD link head LINKHEAD ehead
LINKHEAD rel= head LINKHEADREL ehead
LINKHEADREL " head DQUOTELINKHEADREL "head
DQUOTELINKHEADREL " " HEAD e
LINKHEADREL ' head SQUOTELINKHEADREL 'head
SQUOTELINKHEADREL ' ' HEAD e
LINKHEAD href= head LINKHEADHREF ehead
LINKHEADHREF " head DQUOTELINKHEADHREF "head
DQUOTELINKHEADHREF " " LINKHEADHREFREL e
LINKHEADHREF ' head SQUOTELINKHEADHREF 'head
SQUOTELINKHEADHREF ' ' LINKHEADHREFREL e
LINKHEADHREFREL rel= head LINKHEADREL ehead
HEAD href= head LINKHEADATR ehead
LINKHEADREL href= head LINKHEADATR ehead
LINKHEADATR " head DQUOTELINKHEADATR "head
```

```
DQUOTELINKHEADATR " " HEAD head
LINKHEADATR ' head SQUOTELINKHEADATR 'head
SQUOTELINKHEADATR ' ' HEAD head
BODY link body LINKBODY ebody
LINKBODY rel= body LINKBODYREL ebody
LINKBODYREL " body DQUOTELINKBODYREL "body
DQUOTELINKBODYREL " " BODY e
LINKBODYREL ' body SQUOTELINKBODYREL 'body
SQUOTELINKBODYREL ' ' BODY e
LINKBODY href= body LINKBODYHREF ebody
LINKBODYHREF " body DQUOTELINKBODYHREF "body
DQUOTELINKBODYHREF " " LINKBODYHREFREL e
LINKBODYHREF ' body SQUOTELINKBODYHREF 'body
SQUOTELINKBODYHREF ' ' LINKBODYHREFREL e
LINKBODYHREFREL rel= body LINKBODYREL ebody
BODY href= body LINKBODYATR ebody
LINKBODYREL href= body LINKBODYATR ebody
LINKBODYATR " body DQUOTELINKBODYATR "body
DQUOTELINKBODYATR " " BODY body
LINKBODYATR ' body SQUOTELINKBODYATR 'body
SQUOTELINKBODYATR ' ' BODY body
BODY a body A abody
A href= a AATR ea
AATR " a DQUOTEA "a
DQUOTEA " " A a
AATR ' a SQUOTEA 'a
SQUOTEA ' ' A a
A /a a BODY e
BODY button body BUTTON buttonbody
BUTTON id= button BUTTONATR ebutton
BUTTON class= button BUTTONATR ebutton
BUTTON style= button BUTTONATR ebutton
BUTTONATR " button DQUOTEBUTTON "button
DQUOTEBUTTON " " BUTTON button
BUTTONATR ' button SQUOTEBUTTON 'button
SQUOTEBUTTON ' ' BUTTON button
BUTTON /button button BODY e
```

```
BUTTON type= button BUTTONTYPEATR ebutton
BUTTONTYPEATR " button DQUOTEBUTTONTYPE "button
DQUOTEBUTTONTYPE " " BUTTON button
BUTTONTYPEATR ' button SQUOTEBUTTONTYPE 'button
SQUOTEBUTTONTYPE ' ' BUTTON button
DQUOTEBUTTONTYPE submit " DQUOTEBUTTONTYPE e"
DQUOTEBUTTONTYPE reset " DQUOTEBUTTONTYPE e"
DQUOTEBUTTONTYPE button " DQUOTEBUTTONTYPE e"
SQUOTEBUTTONTYPE submit ' SQUOTEBUTTONTYPE e'
SQUOTEBUTTONTYPE reset ' SQUOTEBUTTONTYPE e'
SQUOTEBUTTONTYPE button ' SQUOTEBUTTONTYPE e'
BODY form body FORM formbody
FORM form FORM eform
FORM id= form FORMATR eform
FORM class= form FORMATR eform
FORM style= form FORMATR eform
FORMATR " form DQUOTEFORM "form
DQUOTEFORM " " FORM form
FORMATR ' form SQUOTEFORM 'form
SQUOTEFORM ' ' FORM form
FORM /form form BODY e
FORM action= form FORMACTIONATR eform
FORMACTIONATR " form DQUOTEFORMACTION "form
DQUOTEFORMACTION " " FORM form
FORMACTIONATRATR ' form SQUOTEFORMACTION 'form
SQUOTEFORMACTION ' ' FORM form
FORM method= form FORMMETHODATR eform
FORMMETHODATR " form DQUOTEFORMMETHOD "form
DQUOTEFORMMETHOD " " FORM form
FORMMETHODATR ' form SQUOTEFORMMETHOD 'form
SQUOTEFORMMETHOD ' ' FORM form
DQUOTEFORMMETHOD POST " DQUOTEFORMMETHOD e"
DQUOTEFORMMETHOD GET " DQUOTEFORMMETHOD e"
SQUOTEFORMMETHOD POST ' SQUOTEFORMMETHOD e'
SQUOTEFORMMETHOD GET ' SQUOTEFORMMETHOD e'
BODY input body INPUT inputbody
INPUT id= input INPUTATR einput
```

```
INPUT class= input INPUTATR einput
INPUT style= input INPUTATR einput
INPUTATR " input DQUOTEINPUT "input
DQUOTEINPUT " " INPUT input
INPUTATR ' input SQUOTEINPUT 'input
SQUOTEINPUT ' ' INPUT input
INPUT /input input BODY e
INPUT type= input INPUTTYPEATR einput
INPUTTYPEATR " input DQUOTEINPUTTYPE "input
DQUOTEINPUTTYPE " " INPUT input
INPUTTYPEATR ' input SQUOTEINPUTTYPE 'input
SQUOTEINPUTTYPE ' ' INPUT input
DQUOTEINPUTTYPE text " DQUOTEINPUTTYPE e"
DQUOTEINPUTTYPE password " DQUOTEINPUTTYPE e"
DQUOTEINPUTTYPE email " DQUOTEINPUTTYPE e"
DQUOTEINPUTTYPE number " DQUOTEINPUTTYPE e"
DQUOTEINPUTTYPE checkbox " DQUOTEINPUTTYPE e"
SQUOTEINPUTTYPE text ' SQUOTEINPUTTYPE e'
SQUOTEINPUTTYPE password ' SQUOTEINPUTTYPE e'
SQUOTEINPUTTYPE email ' SQUOTEINPUTTYPE e'
SQUOTEINPUTTYPE number ' SQUOTEINPUTTYPE e'
SQUOTEINPUTTYPE checkbox ' SQUOTEINPUTTYPE e'
BODY table body TABLE tablebody
TABLE /table table BODY e
TABLE id= table TABLEATR etable
TABLE class= table TABLEATR etable
TABLE style= table TABLEATR etable
TABLEATR " table DQUOTETABLE "table
DQUOTETABLE " " TABLE table
TABLEATR ' table SQUOTETABLE 'table
SQUOTETABLE ' ' TABLE table
TABLE tr table TR trtable
TR /tr tr TABLE e
TR td tr TD tdtr
TR th tr TH thtr
TD /td td TR e
TH /th th TR e
```

```
TD table td NESTEDTABLE tabletd
NESTEDTABLE /table table TD e
NESTEDTABLE id= table NESTEDTABLEATR etable
NESTEDTABLE class= table NESTEDTABLEATR etable
NESTEDTABLE style= table NESTEDTABLEATR etable
NESTEDTABLEATR " table DQUOTETABLENESTED "table
DQUOTETABLENESTED " " NESTEDTABLE table
NESTEDTABLEATR ' table SQUOTETABLENESTED 'table
SQUOTETABLENESTED ' ' NESTEDTABLE table
NESTEDTABLE tr table TRNESTED trtable
TRNESTED /tr tr NESTEDTABLE e
TRNESTED td tr TDNESTED tdtr
TRNESTED th tr THNESTED thtr
TDNESTED /td td TRNESTED e
THNESTED /th th TRNESTED e
TDNESTED table td NESTEDTABLE2 tabletd
NESTEDTABLE2 /table table TDNESTED e
NESTEDTABLE2 id= table NESTEDTABLEATR2 etable
NESTEDTABLE2 class= table NESTEDTABLEATR2 etable
NESTEDTABLE2 style= table NESTEDTABLEATR2 etable
NESTEDTABLEATR2 " table DQUOTETABLENESTED2 "table
DQUOTETABLENESTED2 " " NESTEDTABLE2 table
NESTEDTABLEATR2 ' table SQUOTETABLENESTED2 'table
SQUOTETABLENESTED2 ' ' NESTEDTABLE2 table
NESTEDTABLE2 tr table TRNESTED2 trtable
TRNESTED2 /tr tr NESTEDTABLE2 e
TRNESTED2 td tr TDNESTED2 tdtr
TRNESTED2 th tr THNESTED2 thtr
TDNESTED2 /td td TRNESTED2 e
THNESTED2 /th th TRNESTED2 e
FORM div form DIVFORM divform
DIVFORM id= div DIVATRFORM ediv
DIVFORM class= div DIVATRFORM ediv
DIVFORM style= div DIVATRFORM ediv
DIVATRFORM " div DQUOTEDIVFORM "div
DQUOTEDIVFORM " " DIVFORM div
DIVATRFORM ' div SQUOTEDIVFORM 'div
```

```
SQUOTEDIVFORM ' ' DIVFORM div
DIVFORM /div div FORM e
FORM h1 form H1FORM h1form
H1FORM id= h1 H1ATRFORM eh1
H1FORM class= h1 H1ATRFORM eh1
H1FORM style= h1 H1ATRFORM eh1
H1ATRFORM " h1 DQUOTEH1FORM "h1
DQUOTEH1FORM " " H1FORM h1
H1ATRFORM ' h1 SQUOTEH1FORM 'h1
SQUOTEH1FORM ' ' H1FORM h1
H1FORM /h1 h1 FORM e
FORM h2 form H2FORM h2form
H2FORM id= h2 H2ATRFORM eh2
H2FORM class= h2 H2ATRFORM eh2
H2FORM style= h2 H2ATRFORM eh2
H2ATRFORM " h2 DQUOTEH2FORM "h2
DQUOTEH2FORM " " H2FORM h2
H2ATRFORM ' h2 SQUOTEH2FORM 'h2
SQUOTEH2FORM ' ' H2FORM h2
H2FORM /h2 h2 FORM e
FORM h3 form H3FORM h3form
H3FORM id= h3 H3ATRFORM eh3
H3FORM class= h3 H3ATRFORM eh3
H3FORM style= h3 H3ATRFORM eh3
H3ATRFORM " h3 DQUOTEH3FORM "h3
DQUOTEH3FORM " " H3FORM h3
H3ATRFORM ' h3 SQUOTEH3FORM 'h3
SQUOTEH3FORM ' ' H3FORM h3
H3FORM /h3 h3 FORM e
FORM h4 form H4FORM h4form
H4FORM id= h4 H4ATRFORM eh4
H4FORM class= h4 H4ATRFORM eh4
H4FORM style= h4 H4ATRFORM eh4
H4ATRFORM " h4 DQUOTEH4FORM "h4
DQUOTEH4FORM " " H4FORM h4
H4ATRFORM ' h4 SQUOTEH4FORM 'h4
SQUOTEH4FORM ' ' H4FORM h4
```

```
H4FORM /h4 h4 FORM e
FORM h5 form H5FORM h5form
H5FORM id= h5 H5ATRFORM eh5
H5FORM class= h5 H5ATRFORM eh5
H5FORM style= h5 H5ATRFORM eh5
H5ATRFORM " h5 DQUOTEH5FORM "h5
DQUOTEH5FORM " " H5FORM h5
H5ATRFORM ' h5 SQUOTEH5FORM 'h5
SQUOTEH5FORM ' ' H5FORM h5
H5FORM /h5 h5 FORM e
FORM h6 form H6FORM h6form
H6FORM id= h6 H6ATRFORM eh6
H6FORM class= h6 H6ATRFORM eh6
H6FORM style= h6 H6ATRFORM eh6
H6ATRFORM " h6 DQUOTEH6FORM "h6
DQUOTEH6FORM " " H6FORM h6
H6ATRFORM ' h6 SQUOTEH6FORM 'h6
SQUOTEH6FORM ' ' H6FORM h6
H6FORM /h6 h6 FORM e
FORM input form INPUTFORM INPUTFORM
INPUTFORM id= input INPUTATRFORM einput
INPUTFORM class= input INPUTATRFORM einput
INPUTFORM style= input INPUTATRFORM einput
INPUTATRFORM " input DQUOTEINPUTFORM "input
DQUOTEINPUTFORM " " INPUTFORM input
INPUTATRFORM ' input SQUOTEINPUTFORM 'input
SQUOTEINPUTFORM ' ' INPUTFORM input
INPUTFORM type= input INPUTTYPEATRFORM einput
INPUTTYPEATRFORM " input DQUOTEINPUTTYPEFORM "input
DQUOTEINPUTTYPEFORM " " FORM input
INPUTTYPEATRFORM ' input SQUOTEINPUTTYPEFORM 'input
SQUOTEINPUTTYPEFORM ' ' FORM input
DQUOTEINPUTTYPEFORM text " DQUOTEINPUTTYPEFORM e"
DQUOTEINPUTTYPEFORM password " DQUOTEINPUTTYPEFORM e"
DQUOTEINPUTTYPEFORM email " DQUOTEINPUTTYPEFORM e"
DQUOTEINPUTTYPEFORM number " DQUOTEINPUTTYPEFORM e"
DQUOTEINPUTTYPEFORM checkbox " DQUOTEINPUTTYPEFORM e"
```

```
SQUOTEINPUTTYPEFORM text ' SQUOTEINPUTTYPEFORM e'
SQUOTEINPUTTYPEFORM password ' SQUOTEINPUTTYPEFORM e'
SQUOTEINPUTTYPEFORM email ' SQUOTEINPUTTYPEFORM e'
SQUOTEINPUTTYPEFORM number ' SQUOTEINPUTTYPEFORM e'
SQUOTEINPUTTYPEFORM checkbox ' SQUOTEINPUTTYPEFORM e'
FORM button form BUTTONFORM buttonform
BUTTONFORM id= button BUTTONATRFORM ebutton
BUTTONFORM class= button BUTTONATRFORM ebutton
BUTTONFORM style= button BUTTONATRFORM ebutton
BUTTONATRFORM " button DQUOTEBUTTONFORM "button
DQUOTEBUTTONFORM " " BUTTONFORM button
BUTTONATRFORM ' button SQUOTEBUTTONFORM 'button
SQUOTEBUTTONFORM ' ' BUTTONFORM button
BUTTONFORM /button button FORM e
BUTTONFORM type= button BUTTONTYPEATRFORM ebutton
BUTTONTYPEATRFORM " button DQUOTEBUTTONTYPEFORM "button
DQUOTEBUTTONTYPEFORM " " BUTTONFORM button
BUTTONTYPEATRFORM ' button SQUOTEBUTTONTYPEFORM 'button
SQUOTEBUTTONTYPEFORM ' ' BUTTONFORM button
DQUOTEBUTTONTYPEFORM submit " DQUOTEBUTTONTYPEFORM e"
DQUOTEBUTTONTYPEFORM reset " DQUOTEBUTTONTYPEFORM e"
DQUOTEBUTTONTYPEFORM button " DQUOTEBUTTONTYPEFORM e"
SQUOTEBUTTONTYPEFORM submit ' SQUOTEBUTTONTYPEFORM e'
SQUOTEBUTTONTYPEFORM reset ' SQUOTEBUTTONTYPEFORM e'
SQUOTEBUTTONTYPEFORM button ' SQUOTEBUTTONTYPEFORM e'
BUTTONTYPEATRFORM /button button FORM e
FORM br form FORM eform
```

3.2. Program HTML Checker

Berikut adalah fungsi-fungsi yang telah kelompok kami buat untuk melakukan validasi terhadap sintaks *file* HTML menggunakan PDA pada 3.1.

NO	Fungsi	Tujuan
1.	get_HTML_path (html_file_name)	Fungsi untuk mendapatkan path dari suatu file HTML agar dapat dibaca pada fungsi tokenizer.
2.	read_txt_to_matrix (file_path)	Fungsi untuk membaca file pda.txt dan mengubahnya menjadi bentuk matriks dengan rincian: - Row [0] = current state - Row [1] = input - Row [2] = current top of stack - Row [3] = next state - Row [4] = stack
3.	tokenize_html_with_regex (html_content)	Fungsi dan prosedur untuk membaca file kemudian akan dibaca kata per kata yang ada di dalam file tersebut dan mengubahnya sebagai token. Penggunaan regex disini berfungsi untuk memudahkan kami dalam parsing html file agar kami tidak perlu mengecek simbol < >. Kami menganggap bila ditemukan simbol < maka otomatis menjadi opening tag dan ditutup oleh >.
4.	add_method_values (html_arr, method_values)	Prosedur untuk menyimpan value atribut form method=. Hal ini dilakukan karena adanya pembatasan value atribut form method=.

5.	add_input_types (html_arr, input_types)	Prosedur untuk menyimpan value atribut input type=. Hal ini dilakukan karena adanya pembatasan value atribut input type=.
6.	add_button_types (html_arr, button_types)	Fungsi untuk menyimpan value atribut button type=. Hal ini dilakukan karena adanya pembatasan value atribut button type=.

BAB IV
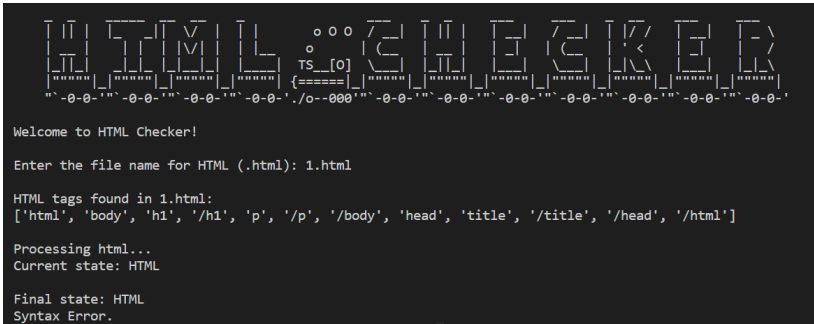## IMPLEMENTASI DAN UJI COBA

4.1 inputAcc.html

Code	
Output Checker	
Penjelasan	File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya.

4.2   inputReject.html

| Code | ```html
test > 🔲 inputReject.html > ⬦ html
1    <html>
2      <head>
3        <title>Simple Webpage</title>
4      </head>
5      <body>
6        <h1>Hello, World!<h1>
7        <p>This is a simple webpage.</p>
8      </body>
9    </html>
``` |
| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): inputReject.html

HTML tags found in pda2.txt:
['html', 'head', 'title', '/title', '/head', 'body', 'h1', 'h1', 'p', '/p', '/body', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h1...
Current state: H1

Final state: H1
Syntax Error.
``` |
| Penjelasan | File tersebut berstatus error karena tag h1 tidak ditutup dengan benar. Harusnya tag penutupnya adalah </h1> namun pada file tersebut adalah <h1> sehingga tidak sesuai dengan PDA dan berakhir error. State pada file tersebut berakhir pada state H1. |

4.3   1.html

Code	
| Code | ```html
1  <html>
2    <body>
3      <h1>Hello, World!</h1>
4      <p>This is a simple webpage.</p>
5    </body>
6    <head>
7      <title>Simple Webpage</title>
8    </head>
9  </html>
``` |
| Output Checker | Welcome to HTML Checker!

Enter the file name for HTML (.html): 1.html

HTML tags found in 1.html:
['html', 'body', 'h1', '/h1', 'p', '/p', '/body', 'head', 'title', '/title', '/head', '/html']

Processing html...
Current state: HTML

Final state: HTML
Syntax Error. |
| Penjelasan | File tersebut berstatus error karena setelah tag html langsung tag body, tidak ada tag head serta tag head berada setelah tag body. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state HTML. |

4.4   2.html

Code	
| Code | ```
test > 🔲 2.html > ⬡ hmif
1  ⊟ <hmif>
2  ⊟     <head>
3             <title>Simple Webpage</title>
4         </head>
5  ⊟     <body>
6             <h1>Hello, World!</h1>
7             <p>This is a simple webpage.</p>
8         </body>
9       </hmif>
``` |
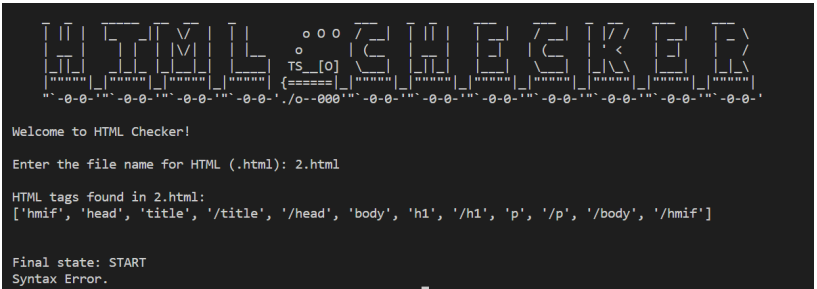| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): 2.html

HTML tags found in 2.html:
['hmif', 'head', 'title', '/title', '/head', 'body', 'h1', '/h1', 'p', '/p', '/body', '/hmif']


Final state: START
Syntax Error.
``` |
| Penjelasan | File tersebut berstatus error karena tag pertama bukan tag html. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state START. |

4.5   3.html

Code	
| Code | ```
test > 🔲 3.html > ⬡ html
1     <html>
2        <body>
3           <h1>Hello, World!</h1>
4           <p>This is a simple webpage.</p>
5        </body>
6     </html>
``` |

| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): 3.html

HTML tags found in 3.html:
['html', 'body', 'h1', '/h1', 'p', '/p', '/body', '/html']

Processing html...
Current state: HTML

Final state: HTML
Syntax Error.
``` |
| Penjelasan | File tersebut berstatus error karena tidak memiliki tag head. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state HTML. |

4.6   4.html

| Code | ```
test > 5 4.html > ⊘ html
  1    <html>
  2      <head>
  3        <title>Simple Webpage</title>
  4      </head>
  5      <body>
  6        <h1>Hello, World!</h1>
  7        <h2>Welcome to my page</h2>
  8        <img src="./welcome.jpeg">
  9        <p>This is a <em>simple</em> webpage.</p>
 10
 11        <div id="footer" class="footer"> This is the end of the page </div>
 12      </body>
 13    </html>
``` |
| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): 4.html

HTML tags found in 4.html:
['html', 'head', 'title', '/title', '/head', 'body', 'h1', '/h1', 'h2', '/h2', 'img', 'src=', '"', '"', 'p', 'em', '/em', '/p', 'div',
 'id=', '"', '"', 'class=', '"', '"', '/div', '/body', '/html']
``` |

```
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h1...
Current state: H1
Processing /h1...
Current state: BODY
Processing h2...
Current state: H2
Processing /h2...
Current state: BODY
Processing img...
Current state: IMG
Processing src=...
Current state: IMGSRC
Processing "...
Current state: DQUOTEIMGSRC
Processing "...
Current state: BODY
Processing p...
Current state: P
Processing em...
Current state: ITALIC
Processing /em...
Current state: P
Processing /p...
Current state: BODY
Processing div...
Current state: DIV
Processing id=...
Current state: DIVATR
Processing "...
Current state: DQUOTEDIV
Processing "...
Current state: DIV
Processing class=...
Current state: DIVATR
Processing "...
Current state: DQUOTEDIV
Processing "...
Current state: DIV
```

| | ```
Processing /div...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya. |

4.7   5.html

| Code | ```
test > 5.html > html
 1    <html>
 2      <head>
 3        <title>Simple Webpage</title>
 4      </head>
 5      <body>
 6        <!-- Bagian utama web -->
 7        <h1>Hello, World!</h1>
 8        <h2>Welcome to my page</h2>
 9        <hr>
10        <img src="./welcome.jpeg" alt="Welcome Banner">
11        <p>This is a <em>simple</em> webpage.</p>
12
13
14        <!-- Custom element -->
15        <div id="footer" class="footer"> This is the end of the page </div>
16      </body>
17    </html>
``` |
| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): 5.html

HTML tags found in 5.html:
['html', 'head', 'title', '/title', '/head', 'body', 'h1', '/h1', 'h2', '/h2', 'hr', 'img', 'src=', '""', '""', 'alt=', '""', '""', 'p'
, 'em', '/em', '/p', 'div', 'id=', '""', '""', 'class=', '""', '""', '/div', '/body', '/html']
``` |

39

```
Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h1...
Current state: H1
Processing /h1...
Current state: BODY
Processing h2...
Current state: H2
Processing /h2...
Current state: BODY
Processing hr...
Current state: BODY
Processing img...
Current state: IMG
Processing src=...
Current state: IMGSRC
Processing "...
Current state: DQUOTEIMGSRC
Processing "...
Current state: BODY
Processing alt=...
Current state: IMGATR
Processing "...
Current state: DQUOTEIMGATR
Processing "...
Current state: BODY
Processing p...
Current state: P
Processing em...
Current state: ITALIC
Processing /em...
Current state: P
Processing /p...
Current state: BODY
Processing div...
Current state: DIV
```

| | ```
Processing class=...
Current state: DIVATR
Processing "...
Current state: DQUOTEDIV
Processing "...
Current state: DIV
Processing /div...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya. |

4.8   6.html

| Code | ```
test > 🔳 6.html > ⊘ html
 1  <html>
 2    <head>
 3      <title>Simple Webpage</title>
 4    </head>
 5    <body>
 6      <!-- Bagian utama web -->
 7      <h1>Hello, World!</h1>
 8      <h2>Welcome to my page</h2>
 9      <img alt="Welcome Banner">
10      <p>This is a <em>simple</em> webpage.</p>
11
12
13      <!-- Custom element -->
14      <div id="footer" class="footer"> This is the end of the page </div>
15    </body>
16  </html>
``` |

Output Checker	
Penjelasan	File tersebut berstatus error karena tag img tidak memiliki atribut src. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state IMG.

4.9   7.html

Code	
Output Checker	

```
Processing html1...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h2...
Current state: H2
Processing /h2...
Current state: BODY
Processing form...
Current state: FORM
Processing action=...
Current state: FORMACTIONATR
Processing "...
Current state: DQUOTEFORMACTION
Processing "...
Current state: FORM
Processing method=...
Current state: FORMMETHODATR
Processing "...
Current state: DQUOTEFORMMETHOD
Processing POST...
Current state: DQUOTEFORMMETHOD
Processing "...
Current state: FORM
Processing h5...
Current state: H5FORM
Processing class=...
Current state: H5ATRFORM
Processing "...
Current state: DQUOTEH5FORM
Processing "...
Current state: H5FORM
Processing /h5...
Current state: FORM
```

```
 Processing br...
 Current state: FORM
 Processing input...
 Current state: INPUTFORM
 Processing type=...
 Current state: INPUTTYPEATRFORM
 Processing "...
 Current state: DQUOTEINPUTTYPEFORM
 Processing text...
 Current state: DQUOTEINPUTTYPEFORM
 Processing "...
 Current state: FORM
 Processing id=...
 Current state: FORMATR
 Processing "...
 Current state: DQUOTEFORM
 Processing "...
 Current state: FORM
 Processing br...
 Current state: FORM
 Processing h5...
 Current state: H5FORM
 Processing class=...
 Current state: H5ATRFORM
 Processing "...
 Current state: DQUOTEH5FORM
 Processing "...
 Current state: H5FORM
 Processing /h5...
 Current state: FORM
 Processing br...
 Current state: FORM
 Processing input...
 Current state: INPUTFORM
 Processing type=...
 Current state: INPUTTYPEATRFORM
 Processing "...
 Current state: DQUOTEINPUTTYPEFORM
 Processing text...
 Current state: DQUOTEINPUTTYPEFORM
 Processing "...
 Current state: FORM
```
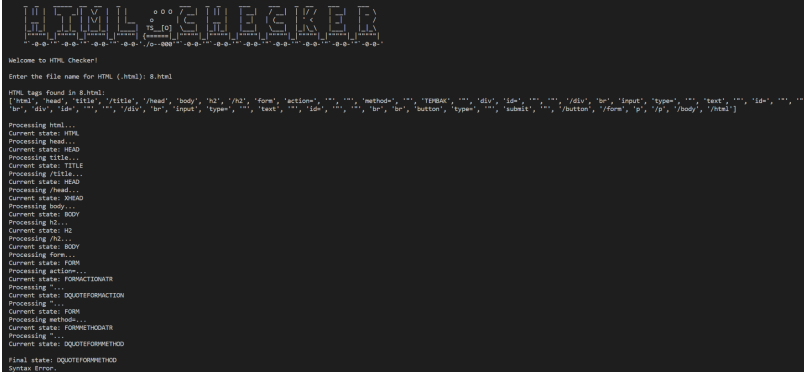
| | ```
Processing id=...
Current state: FORMATR
Processing "...
Current state: DQUOTEFORM
Processing "...
Current state: FORM
Processing br...
Current state: FORM
Processing br...
Current state: FORM
Processing button...
Current state: BUTTONFORM
Processing type=...
Current state: BUTTONTYPEATRFORM
Processing "...
Current state: DQUOTEBUTTONTYPEFORM
Processing submit...
Current state: DQUOTEBUTTONTYPEFORM
Processing "...
Current state: BUTTONFORM
Processing /button...
Current state: FORM
Processing /form...
Current state: BODY
Processing p...
Current state: P
Processing /p...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya. |

4.10   8.html

| Code | ```
test > 8.html > html
1    <html>
2    <head>
3      <title>Simple Webpage</title>
4
5    </head>
6    <body>
7
8    <h2>HTML Forms</h2>
9
10   <form action="/action_page.php" method="TEMBAK">
11     <div id="label">First name:</div><br>
12     <input type="text" id="fname"><br>
13     <div id="label">Last name:</div><br>
14     <input type="text" id="lname"><br><br>
15     <button type="submit">Submit</button>
16   </form>
17
18   <p>If you click the "Submit" button, the form-data will be sent to a page called "/action_page.php".</p>
19
20   </body>
21   </html>
``` |

Output Checker	
Penjelasan	File tersebut berstatus error karena tidak terdapat atribut method = 'TEMBAK' pada tag form. Atribut method hanya dibatasi pada 'GET' dan 'POST'. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state DQUOTEFORMMETHOD.

4.11 9.html

Code	

| Output Checker | ```
 _  _ _____ __  __ _     ___ _  _ ___ ___ _  _ ___ ___
| || |_   _|  \/  | |   |  _ \ |/ /   \_ _/ _ \ |/ /| __| _ \
| __ | | | | |\/| | |__ |  _/ ' <| () | |__| |  ' < | _||   /
|_||_| |_| |_|  |_|____||_| |_|\_\\__/_____/|_|\_\|___|_|_\

Welcome to HTML Checker!

Enter the file name for HTML (.html): 9.html

HTML tags found in 9.html:
['html', 'head', 'title', '/title', 'script', '/script', '/head', 'body', 'h1', '/h1', 'p', 'id=', '""', '""', '/p', '/body', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing script...
Current state: SCRIPTHEAD
Processing /script...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h1...
Current state: H1
Processing /h1...
Current state: BODY
Processing p...
Current state: P
Processing id=...
Current state: PATR
Processing "...
Current state: DQUOTEP
Processing "...
Current state: P
Processing /p...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya. |

4.12   10.html

| Code | ```
test > 5 10.html > ⬡ html
1    <html>
2    <head>
3      <title>Simple Webpage</title>
4      <script>
5        document.getElementById("demo").innerHTML = "Hello JavaScript!";
6      </script>
7    </head>
8    <body>
9
10   <h1>The script element</h1>
11
12   <p id="demo">
13
14   </body>
15   </html>
``` |
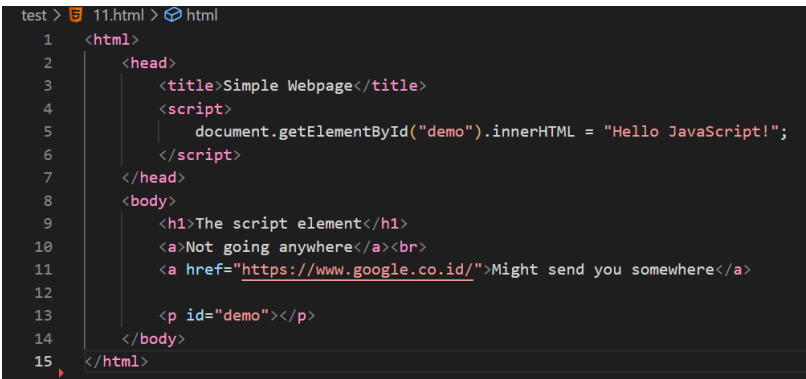
Output Checker	
Penjelasan	File tersebut berstatus error karena tag p tidak ditutup oleh </p>. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state P.

4.13 11.html

Code	

Output Checker

 |
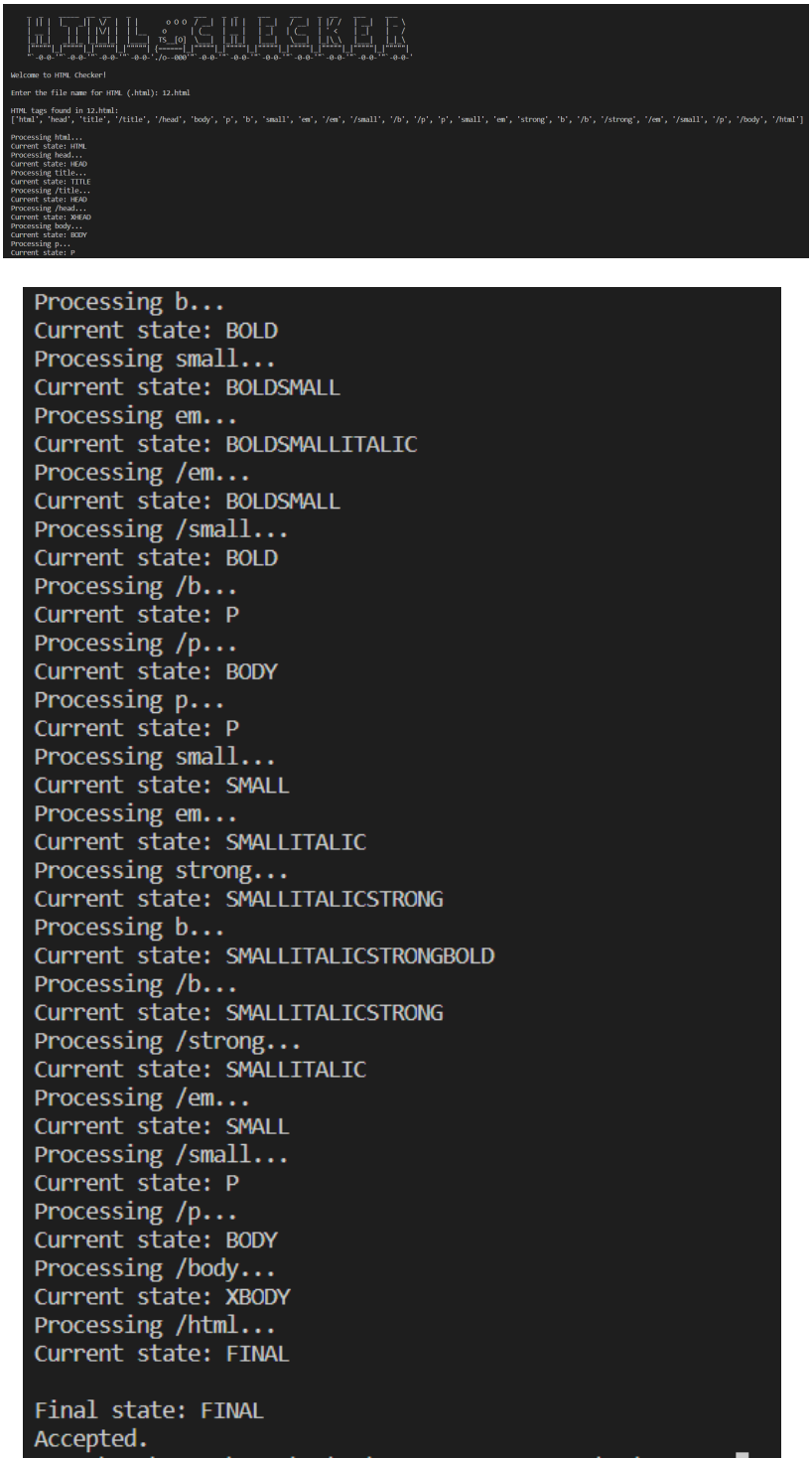| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, dan atributnya. |

4.14   12.html

Code	

Output Checker	
| | ```
Processing b...
Current state: BOLD
Processing small...
Current state: BOLDSMALL
Processing em...
Current state: BOLDSMALLITALIC
Processing /em...
Current state: BOLDSMALL
Processing /small...
Current state: BOLD
Processing /b...
Current state: P
Processing /p...
Current state: BODY
Processing p...
Current state: P
Processing small...
Current state: SMALL
Processing em...
Current state: SMALLITALIC
Processing strong...
Current state: SMALLITALICSTRONG
Processing b...
Current state: SMALLITALICSTRONGBOLD
Processing /b...
Current state: SMALLITALICSTRONG
Processing /strong...
Current state: SMALLITALIC
Processing /em...
Current state: SMALL
Processing /small...
Current state: P
Processing /p...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, nested, dan atributnya. |

4.15   13.html

| Code | ```html
test > 🔲 13.html > ⬡ html > ⬡ body > ⬡ div
 1   <html>
 2       <head>
 3           <link rel="stylesheet" href="css/style.css">
 4       </head>
 5       <body>
 6           <div class=>
 7               <h1>HTML Validator</h1>
 8               <form action="validate.php" method="POST">
 9                   <input type="submit">
10               </form>
11               <abbr></abbr>
12           </div>
13   </html>
``` |
| Output Checker |

```
Welcome to HTML Checker!
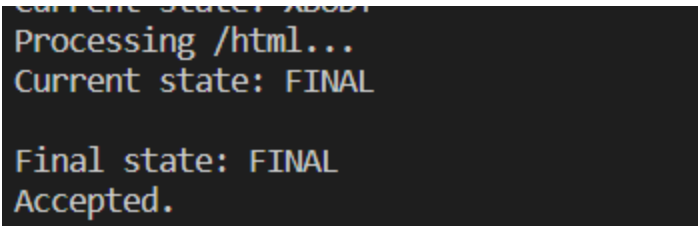
Enter the file name for HTML (.html): 13.html

HTML tags found in 13.html:
['html', 'head', 'link', 'rel=', '"', '"', 'href=', '"', '"', '/head', 'body', 'div', 'class=', 'h1', '/h1', 'form', 'action=', '"', '"', 'method=', '"', 'POST', '"', 'input', 'type=', '"',
'submit', '"', '/form', 'abbr', '/abbr', '/div', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing link...
Current state: LINKHEAD
Processing rel=...
Current state: LINKHEADREL
Processing "...
Current state: DQUOTELINKHEADREL
Processing "...
Current state: HEAD
Processing href=...
Current state: LINKHEADATR
Processing "...
Current state: DQUOTELINKHEADATR
Processing "...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing div...
Current state: DIV
Processing class=...
Current state: DIVATR

Final state: DIVATR
Syntax Error.
``` |
| Penjelasan | File tersebut berstatus error karena atribut class pada tag div tidak memiliki value. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state DIVATR. |

4.16 14.html

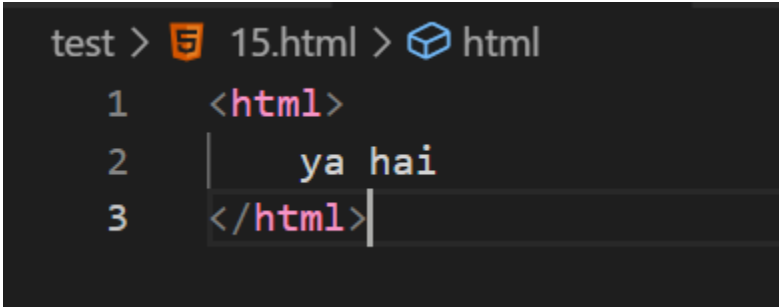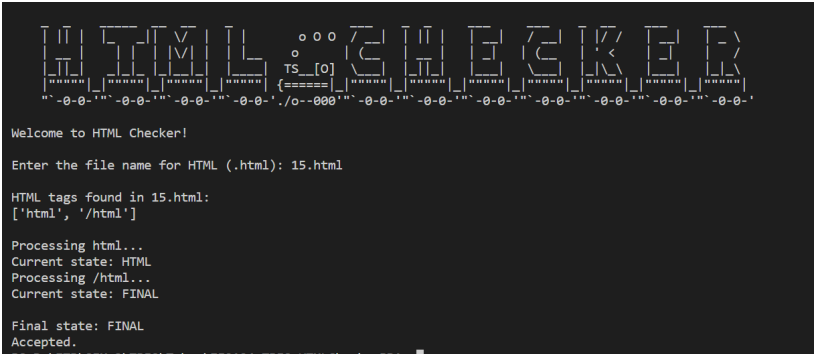|	

Code	test > 🟧 14.html > ⬡ html > ⬡ body > ⬡ table > ⬡ tr > ⬡ td
	
	``html
	1 <html>
	2 <head>
	3 <title>Nested Table Example</title>
	4 </head>
	5 <body>
	6
	7 Nested Table Example
	8
	9 <table>
	10 <tr>
	11 <th>Main Table Header 1</th>
	12 <th>Main Table Header 2</th>
	13 <th>Main Table Header 3</th>
	14 </tr>
	15 <tr>
	16 <td>Row 1, Cell 1</td>
	17 <td>Row 1, Cell 2</td>
	18 <td>
	19 <!-- Nested Table -->
	20 <table>
	21 <tr>
	22 <th>Nested Table Header 1</th>
	23 <th>Nested Table Header 2</th>
	24 </tr>
	25 <tr>
	26 <td>Nested Row 1, Cell 1</td>
	27 <td>Nested Row 1, Cell 2</td>
	28 </tr>
	29 <tr>
	30 <td>Nested Row 2, Cell 1</td>
	31 <td>Nested Row 2, Cell 2</td>
	32 </tr>
	33 </table>
	34 <!-- End of Nested Table -->
	35 </td>
	36 </tr>
	37 <tr>
	38 <td>Row 2, Cell 1</td>
	39 <td>Row 2, Cell 2</td>
	40 <td>Row 2, Cell 3</td>
	41 </tr>
	42 </table>
	43
	44 </body>
	45 </html>
	``

Output Checker	 Welcome to HTML Checker! Enter the file name for HTML (.html): 14.html HTML tags found in 14.html: ['html', 'head', 'title', '/title', '/head', 'body', 'h2', '/h2', 'table', 'tr', 'th', '/th', 'th', '/th', 'th', '/th', '/tr', 'tr', 'td', '/td', 'td', '/td', 'td', 'table', 'tr', 'th', '/th', 'th', '/th', '/tr', 'tr', 'td', '/td', 'td', '/td', '/tr', 'tr', 'td', '/td', 'td', '/td', '/tr', '/table', '/td', '/tr', 'tr', 'td', '/td', 'td', '/td', 'td', '/td', '/tr', '/table', '/body', '/html']

```
Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing h2...
Current state: H2
Processing /h2...
Current state: BODY
Processing table...
Current state: TABLE
Processing tr...
Current state: TR
Processing th...
Current state: TH
Processing /th...
Current state: TR
Processing th...
Current state: TH
Processing /th...
Current state: TR
Processing th...
Current state: TH
Processing /th...
Current state: TR
Processing /tr...
Current state: TABLE
Processing tr...
Current state: TR
Processing td...
Current state: TD
Processing /td...
Current state: TR
Processing td...
Current state: TD
Processing /td...
Current state: TR
Processing td...
Current state: TD
Processing table...
Current state: NESTEDTABLE
Processing tr...
Current state: TRNESTED
Processing th...
Current state: THNESTED
Processing /th...
Current state: TRNESTED
Processing th...
```

```
Current state: THNESTED
Processing /th...
Current state: TRNESTED
Processing /tr...
Current state: NESTEDTABLE
Processing tr...
Current state: TRNESTED
Processing td...
Current state: TDNESTED
Processing /td...
Current state: TRNESTED
Processing td...
Current state: TDNESTED
Processing /td...
Current state: TRNESTED
Processing /tr...
Current state: NESTEDTABLE
Processing tr...
Current state: TRNESTED
Processing td...
Current state: TDNESTED
Processing /td...
Current state: TRNESTED
Processing td...
Current state: TDNESTED
Processing /td...
Current state: TRNESTED
Processing /tr...
Current state: NESTEDTABLE
Processing /table...
Current state: TD
Processing /td...
Current state: TR
Processing /tr...
Current state: TABLE
Processing tr...
Current state: TR
Processing td...
Current state: TD
Processing /td...
Current state: TR
Processing td...
Current state: TD
Processing /td...
Current state: TR
Processing td...
Current state: TD
Processing /td...
Current state: TR
Processing /tr...
Current state: TABLE
Processing /table...
Current state: BODY
Processing /body...
Current state: XBODY
```

| | ```
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, nested, dan atributnya. |

4.17   15.html

Code	
Output Checker	
Penjelasan	File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, nested, dan atributnya.

4.18   16.html

| Code | ```html
test > 🖻 16.html > ⊘ html
 1   <html>
 2       <head>
 3           <title>Simple Webpage</title>
 4           <script>
 5               document.getElementById("demo").innerHTML = "Hello JavaScript!";
 6           </script>
 7       </head>
 8   <body>
 9
10   <div class="myDiv">
11       <div>
12           <h1>My First Heading</h1>
13           <p>My first paragraph.</p>
14       </div>
15   <h2>This is a heading in a div element</h2>
16   <p>This is some text in a div element.</p>
17   </div>
18
19   </body>
20   </html>
``` |
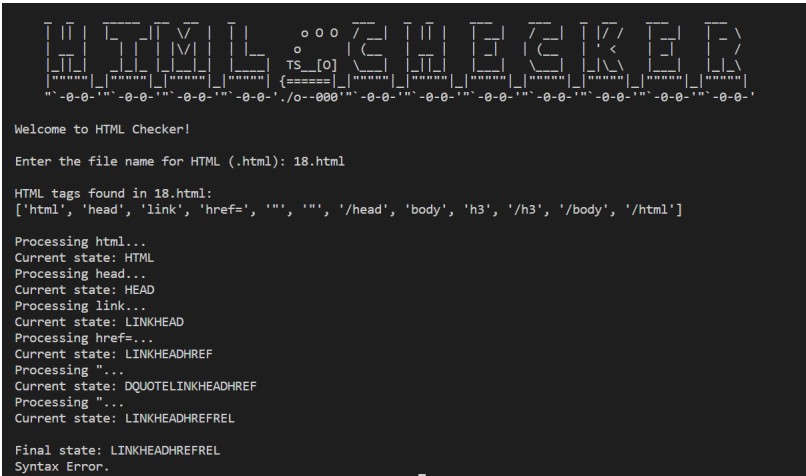| Output Checker | HTML CHECKER

Welcome to HTML Checker!

Enter the file name for HTML (.html): 16.html

HTML tags found in 16.html:
['html', 'head', 'title', '/title', 'script', '/script', '/head', 'body', 'div', 'class=', '"', '"', 'div', 'h1', '/h1', 'p', '/p', '/div', 'h2', '/h2', 'p', '/p', '/div', '/body', '/html'
]

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD
Processing script...
Current state: SCRIPTHEAD
Processing /script...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing div...
Current state: DIV
Processing class=...
Current state: DIVATR
Processing "...
Current state: DQUOTEDIV
Processing "...
Current state: DIV
Processing div...
Current state: NESTDIV
Processing h1...
Current state: H1NESTDIV
Processing /h1...
Current state: NESTDIV
Processing p...

```
Processing /p...
Current state: NESTDIV
Processing /div...
Current state: DIV
Processing h2...
Current state: H2DIV
Processing /h2...
Current state: DIV
Processing p...
Current state: PDIV
Processing /p...
Current state: DIV
Processing /div...
Current state: BODY
Processing /body...
Current state: XBODY
Processing /html...
Current state: FINAL

Final state: FINAL
Accepted.
``` |
| Penjelasan | File tersebut berstatus accepted karena semua tagnya sudah sesuai dengan PDA, baik itu opening tag, closing tag, nested, dan atributnya. |

4.19   17.html

| Code | ```html
test > 🖥 17.html > 🔷 html
1    <html>
2        <head>
3        </head>
4            <body>
5                <div>
6                    <p> halo broooww </p>
7            </body>
8    </html>
``` |
| Output Checker | HTML CHECKER

Welcome to HTML Checker!

Enter the file name for HTML (.html): 17.html

HTML tags found in 17.html:
['html', 'head', '/head', 'body', 'div', 'p', '/p', '/body', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing /head...
Current state: XHEAD
Processing body...
Current state: BODY
Processing div...
Current state: DIV
Processing p...
Current state: PDIV
Processing /p...
Current state: DIV

Final state: DIV
Syntax Error. |
| Penjelasan | File tersebut berstatus error karena tag div tidak ditutup. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state DIV. |

4.20   18.html

| Code | ```
test >  18.html >  html >  head >  link
1  <html>
2      <head>
3          <link href="https://fonts.googleapis.com/css?family=Roboto">
4      </head>
5      <body>
6          <h3>testing</h3>
7      </body>
8  </html>
``` |
| Output Checker | ```
Welcome to HTML Checker!

Enter the file name for HTML (.html): 18.html

HTML tags found in 18.html:
['html', 'head', 'link', 'href=', '"', '"', '/head', 'body', 'h3', '/h3', '/body', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing link...
Current state: LINKHEAD
Processing href=...
Current state: LINKHEADHREF
Processing "...
Current state: DQUOTELINKHEADHREF
Processing "...
Current state: LINKHEADHREFREL

Final state: LINKHEADHREFREL
Syntax Error.
``` |
| Penjelasan | File tersebut berstatus error karena tag link tidak memiliki atribut rel=. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state LINKHEADHREFREL. |

4.21   19.html

| Code | ```html
<html>
<head>
    <title> tes dek </title>
    </body>
    <h1> tbfo A gasie? </h1>
    </p> AMIN <p>
    <img src="image.jpg" alt="ini image">
    <input type="text">
    <body>
</head>
</html>
``` |
| Output Checker |

Welcome to HTML Checker!

Enter the file name for HTML (.html): tes5.html

HTML tags found in tes5.html:
['html', 'head', 'title', '/title', '/body', 'h1', '/h1', '/p', 'p', 'img', 'src=', '""', '""', 'alt=', '""', '""', 'input', 'type=', '""', 'text', '""', 'body', '/head', '/html']

Processing html...
Current state: HTML
Processing head...
Current state: HEAD
Processing title...
Current state: TITLE
Processing /title...
Current state: HEAD

Final state: HEAD
Syntax Error. |
| Penjelasan | File tersebut berstatus error karena tag body tidak seharusnya berada di dalam tag head. Selain itu, tag title juga tidak boleh dimulai dengan closing tag. Karena kondisi tersebut tidak sesuai dengan state PDA, maka hasil akhir program akan eror dan state berakhir pada state HEAD. |

4.22 20.html

| Code | ```
test > 5 20.html > ⊘ html > ⊘ body > ⊘ script
 1   <html>
 2       <head>
 3           <link rel="stylesheet">
 4       </head>
 5       <body>
 6           <p> <strong> tes bro </strong></p><br>
 7           <script> okeng
 8           <h1>
 9               <a href="https://www.google.com"> google </a>
10           </h1>      Declaration or statement expected.
11       </body>      Expression expected.
12   </html>      Expression expected.
``` |
| Output Checker | |
| Penjelasan | File tersebut berstatus error karena tag script tidak ditutup. Karena kondisi tersebut tidak sesuai dengan state PDA, maka pada state tersebut akan eror dan akhirnya state berakhir pada state SCRIPTBODY. |

BAB V
PENUTUP

5.1   Kesimpulan

Pushdown Automata digunakan sebagai model komputasi untuk memvalidasi sintaks HTML berdasarkan aturan dan *transition state* yang telah ditentukan. Pendekatan ini membantu dalam mendeteksi dan mengatasi kesalahan sintaks yang mungkin terjadi dalam dokumen HTML.

Hasil pengujian menunjukkan bahwa HTML *checker* dengan Pushdown Automata mampu secara efektif mengidentifikasi kesalahan sintaks dalam dokumen HTML. Penerapan PDA memungkinkan penanganan struktur HTML dengan baik, memastikan bahwa setiap elemen dan *tag* mengikuti aturan yang ditetapkan. Meskipun masih ada ruang untuk pengembangan lebih lanjut, seperti penanganan kasus-kasus khusus, hasil awal menunjukkan bahwa pendekatan ini dapat menjadi dasar yang baik untuk pengembangan HTML *checker* yang lebih canggih.

Kelebihan dari penggunaan Pushdown Automata dalam HTML *checker* adalah kemampuannya dalam menangani struktur HTML yang dapat memeriksa kesesuaian tanda tutup (< atau >), serta mendeteksi kemungkinan kesalahan sintaks dengan lebih baik. Namun, tantangan yang mungkin dihadapi melibatkan penanganan kasus-kasus khusus atau fitur HTML yang kompleks. Dengan demikian, HTML *checker* dengan Pushdown Automata dapat dianggap sebagai alat yang efektif untuk memastikan kebenaran suatu struktur HTML, meskipun perlu perhatian lebih lanjut untuk pengembangan dan peningkatan fungsionalitasnya.

5.2   Saran

Terdapat beberapa saran yang dapat kami ajukan pada tugas besar ini, diantaranya:

1. Manajemen waktu yang lebih baik, sehingga tugas besar dapat selesai lebih awal dan dapat mencoba lebih banyak *testcase* dan *error handling*.
2. Membuat *transition state* Pushdown Automata yang lebih lengkap dan baik.

5.3   Github Repository

Link Github *repository* Tugas Besar Mata Kuliah IF2124 Teori Bahasa Formal dan Otomata (kelompok denisepro) dapat diakses pada tautan berikut: https://github.com/wigaandini/IF2124_TBFO_HTMLCheckerPDA.

5.4   Diagram State

Link diagram *state* Pushdown Automata (PDA) Tugas Besar Mata Kuliah IF2124 Teori Bahasa Formal dan Otomata (kelompok denisepro) dapat diakses pada tautan berikut:
https://drive.google.com/file/d/1i6M4W5LrdqCZXAFTshKjnvCpq_wXevyE/view?usp=sharing. (catatan: buka pada situs https://app.diagrams.net/).

5.5   Pembagian Kerja

NIM	Nama	Tugas
13522013	Denise Felicia Tiowanni	- Membuat *transition state* PDA - Membuat tokenizer - Membuat laporan bab 1, bab 2, bab 5
13522050	Kayla Namira Mariadi	- Membuat diagram *state* PDA - Membuat laporan bab 5
13522053	Erdianti Wiga Putri Andini	- Membuat *transition state* PDA - Membuat tokenizer - Membuat laporan bab 1, bab 3, bab 4

DAFTAR PUSTAKA

https://www.geeksforgeeks.org/introduction-of-pushdown-automata/

https://cdn-edunex.itb.ac.id/49723-Formal-Language-Theory-and-Automata/1692692060631_Introduction-to-Automata-Theory-Languages-and-Computation-Edition-31.pdf

https://www.w3schools.com/html/html_intro.asp

https://www.theserverside.com/definition/HTML-Hypertext-Markup-Language