

A journey to the land of LuaLaT_EX

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Breskens, NL

Idea

1 A short story

A wonderful serenity has taken possession of my entire soul, like these sweet mornings of spring which I enjoy with my whole heart. I am alone, and feel the charm of existence in this spot, which was created for the bliss of souls like mine. I am so happy, my dear friend, so absorbed in the exquisite sense of mere tranquil existence, that I neglect my talents.

- one
- two
- three

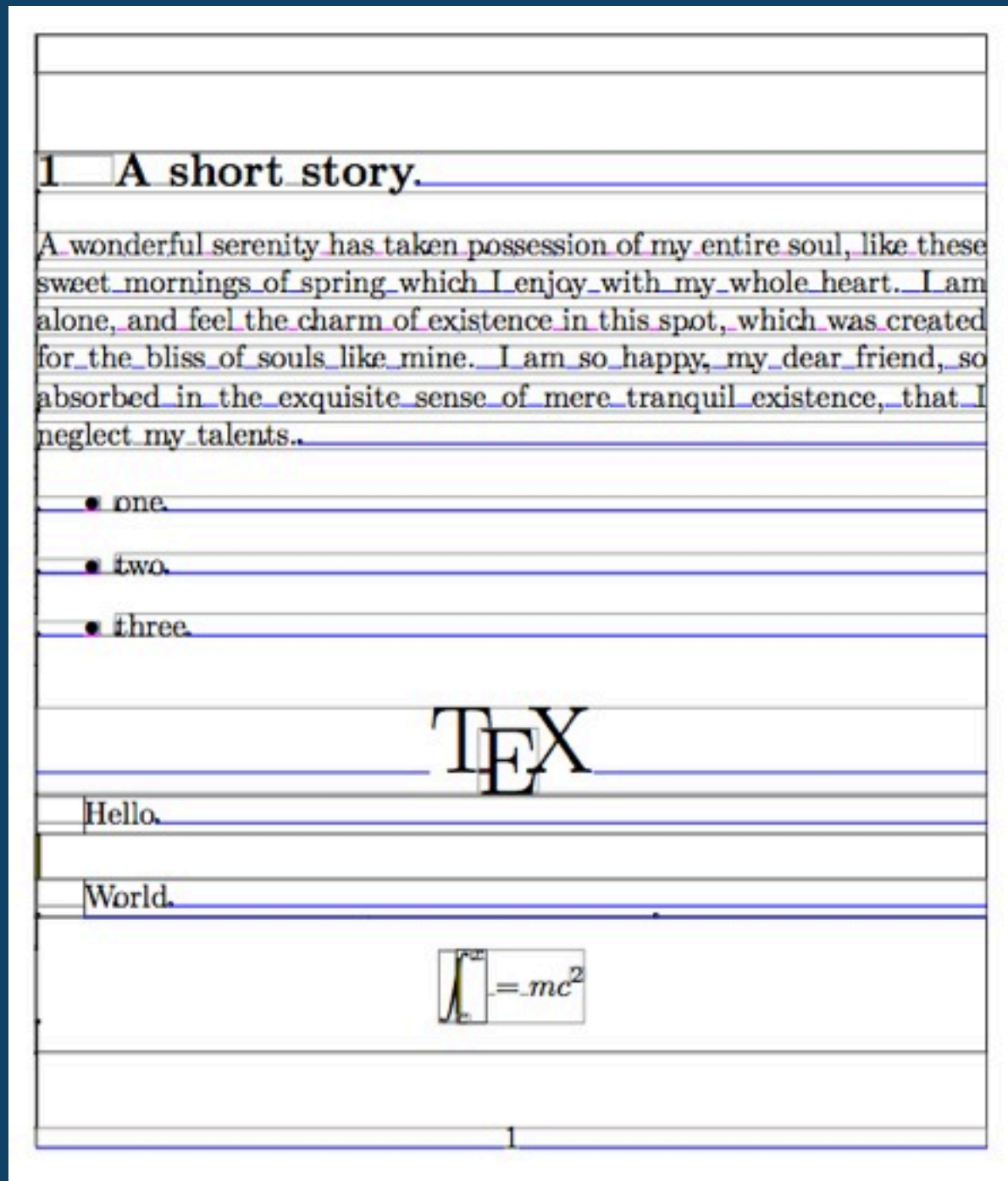
T_EX

Hello

World

$$\int_c^x = mc^2$$

Idea



Detail



Solution

Source

```
\documentclass{article}
\begin{document}
\section{A short story}
```

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```
\begin{itemize}
  \item one
  \item two
  \item three
\end{itemize}
```

```
\bgroup\fontsize{30}{34}\selectfont
\centerline{\TeX}
\egroup
```

```
\vbox{\strut Hello}\kern .5cm\vbox{\strut World}
```



PDF

1 A short story

A wonderful serenity has taken possession of my entire soul, like these sweet mornings of spring which I enjoy with my whole heart. I am alone, and feel the charm of existence in this spot, which was created for the bliss of souls like mine. I am so happy, my dear friend, so absorbed in the exquisite sense of mere tranquil existence, that I neglect my talents.

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Intermediate
format

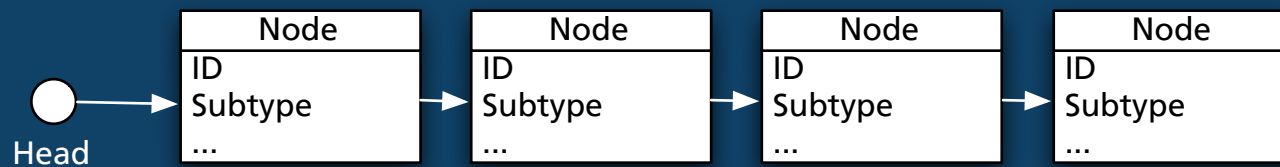
T_EX

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1

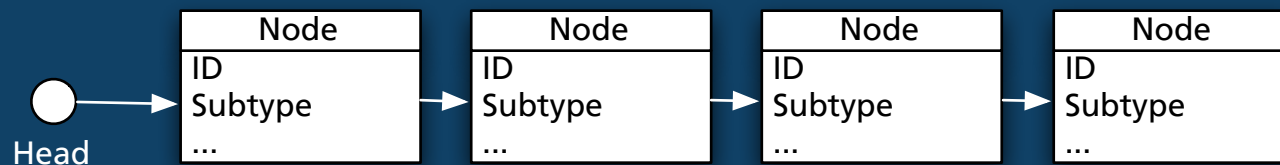
Intermediate format

- data structure: List of records (nodes)



Intermediate format

- data structure: List of records (nodes)



- Example: glyph node (letter "H")

Node	
ID	37
subtype	0
next	...
char	72
font	0
lang	1
...	...

Glyph node "H"

```
n = node.new(37)
n.char = 72
n.font = 0
n.lang = 1
```


Intermediate format

A wonderful serenity has taken possession of my entire soul, like these sweet mornings of spring which I enjoy with my whole heart. I am alone, and feel the charm of existence in this spot, which was created for the bliss of souls like mine.

vlist	
width	...
height	...
depth	...
list	(Pointer)



hlist	
width	...
height	...
depth	...
next	(Pointer)
list	(Pointer)



hlist	
width	...
height	...
depth	...
next	(Pointer)
list	(Pointer)



hlist	
width	...
height	...
depth	...
next	(Pointer)
list	(Pointer)



Detail



Detail



PDF instructions

```
1 0 0 RG 0 0 10 5 re s
```

Detail



PDF instructions

1 0 0 RG 0 0 10 5 re s
red

Detail



PDF instructions

1 0 0 RG 0 0 10 5 re s
 red rectangle

PDF instructions

pdf_literal	
data	1 0 0 RG 0 0 10 5 re s
mode	0
next	(Pointer)
prev	(Pointer)

```
node.new("whatsit","pdf_literal")
node.data = "1 0 0 RG 0 0 10 5 re s"
node.mode = 0
node.next = ...
node.prev = ...
```

Loop

current_node = *beginning of list*

while current_node *is valid*

inspect node and insert PDF instructions if needed

go to the next node

end

Loop

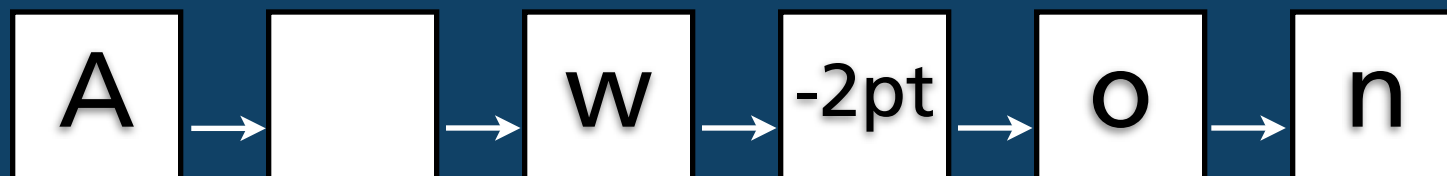
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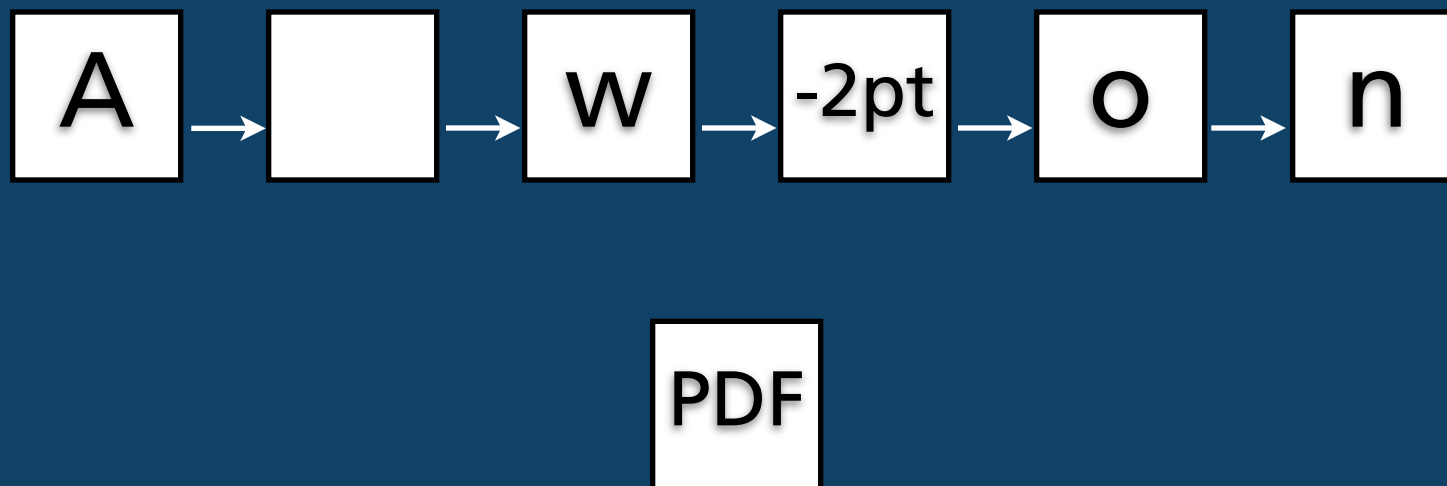
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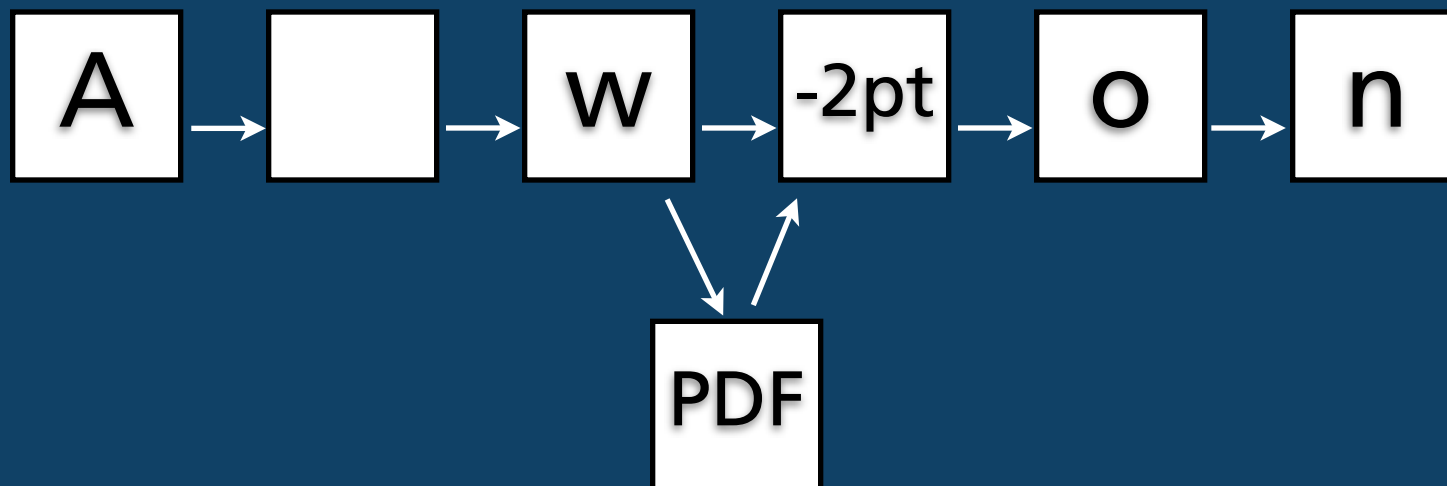
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go to the next node

end



Loop

current_node = *beginning of list*

while current_node *is valid*

if the current node is a box,

do this procedure with the content of the box

inspect node and insert PDF instructions if needed

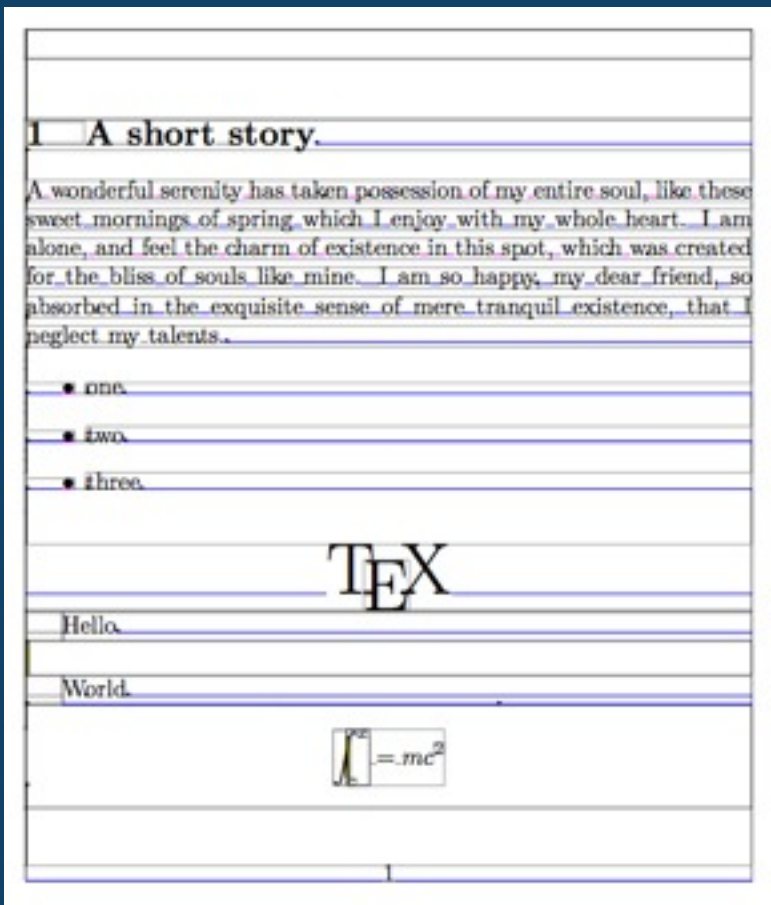
go to the next node

end

In Lua

```
current_node = head
while current_node do
  if current_node.id == 11 then      -- kern
    rectangle = node.new("whatsit","pdf_literal")
    rectangle.data = " 1 0 0 RG 0 0 5 10 re s"
    node.insert_before(head,current_node,rectangle)
  elseif current_node.id == 12 then  -- penalty
    ....
  end
  current_node = current_node.next
end
```

Back to the example



```
\usepackage{atbegshi}
```

```
\AtBeginShipout{
```

```
\directlua{
```

```
inspect_box(
```

```
tex.box["AtBeginShipoutBox"])
```

```
}
```

```
}
```



Last slide

Thanks for listening