Session
AD004

PostScript Programming

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PostScript is a device independent Page Description Language with general programming capabilities.

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References:

- ***PostScript Language series by Adobe***
  - ***Reference Manual – Red***
  - ***Tutorial and Cookbook – Blue***
  - ***Program Design – Green***

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NOTES

References (cont'd):

- ***other authors***

Holzgang, David
"Understanding PostScript " Programming"
Sybex

Broswell, Frank
"Inside PostScript"
Peachpit Press

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References (cont'd):

- ***other authors***

Holzgang, David
"PostScript Programmer's Reference Guide"
Scott Foresman & Co

Thomas, Barry
"A PostScript Cookbook"
Van Nostrand Reinhold

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NOTES

References (cont'd):

- ***other authors***

Roth, Stephen
"Real World PostScript"
Addison Wesley

Glover, Gary
"Running PostScript
from MS-DOS"
Windcrest Books

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There are two classes of concepts in PostScript:

- ***the imaging model; and***
- ***the programming model***

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NOTES

The PostScript Imaging Model

- ***Coordinate system***
- ***Paints (a.k.a. inks)***
- ***Paths***

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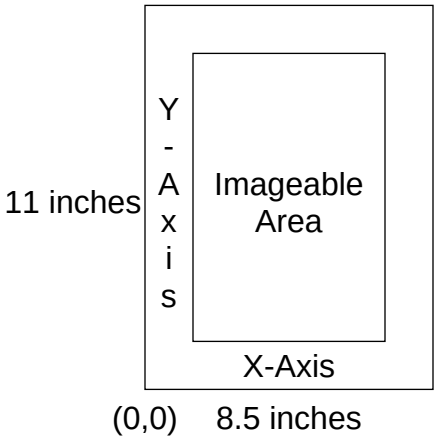
Coordinate System



- ***All positions are in terms of x,y coordinates***
- ***Initial Units Points (72 points ≈ 1 inch)***
- ***Scalable***

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Paints

- ***PostScript uses a "Paint" to fill a path or shape***
- ***Paints can be any shade of Black/White/Gray (monochrome devices) or color (on color devices)***
- ***Intermediate shades are produced by halftoning***
- ***Paints are opaque***

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Paths

You use PostScript commands to create "Paths" which are filled with "Paint"

```
newpath
1 inch 1 inch moveto
0 2 inch rlineto
1 inch 0 rlineto
1 inch -2 inch rlineto
closepath
fill
```

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Programming Model

- ***Stack based***
- ***Objects***
- ***Fonts***

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Programming Model

- ***Stack based language***
- ***Operands pushed on stack***
- ***Operators operate on stack***

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Stack based language

			mul		
add			2315		6945
5	⇒	9	3	⇒	(string)
4			(string)		739
			739		

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Objects

- ***numbers***
  5 -7 8.652
- ***strings***
  (abc) (A)
- ***fonts***
  /Helvetica findfont

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Fonts

- ***collection of characters (can be filled, outlined, or stroked).***
- ***Are painted using the "show" command***

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Example of PostScript

Draw a line.

```
newpath
0 0 moveto
2 inch 2 inch rlineto
stroke
```

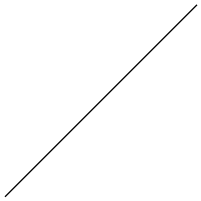

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Figure Drawing

Draw a trapezoid!

```
newpath
1 inch 1 inch moveto
0 2 inch rlineto
1 inch 0 rlineto
1 inch -2 inch rlineto
closepath
fill
```


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PostScript Text Example

Draw some 2 inch high characters in Helvetica

This is a test!

```
/Helvetica findfont
2 inch scalefont
setfont
(This is a test!) show
```


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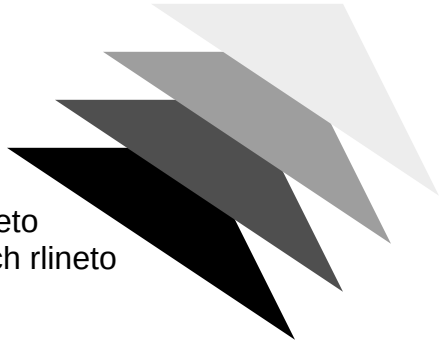
NOTES

Gray Scale and Opaqing Example

This example shows translation, loops, and opaquing.



```
4 {
    newpath
    0 0 moveto
    2 inch 0 rlineto
    1 inch -2 inch rlineto
    closepath
    fill
    currentgray .31 add setgray
    .5 inch .5 inch translate
    } repeat
```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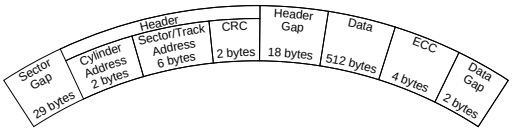
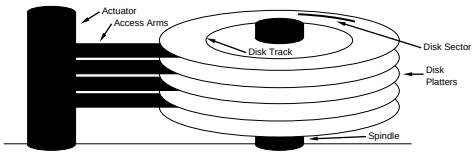
PostScript Power





On an SMD interface drive configured for use on a Digital system, 575 bytes are needed to store a 512-Byte data record. The 63-Byte overhead required to store each record also decreases the device's effective transfer rate.

This diagram was done as a PostScript programming problem

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NOTES

Debugging PostScript Programs

- ***make use of interactive mode AND/OR exception handlers***
- ***work incrementaly***

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Program Design Suggestions

- ***conform to the EPS standard***
- ***keep things structured***
- ***keep things manageable***
- ***watch out for side effects***

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NOTES

PostScript is extremely powerful!

PostScript is also extremely seductive, excercise caution!

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Questions?

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