

SURVEY METHODOLOGY

SURVEY METHODOLOGY

This is the Subtitle

Robert M. Groves

Universitat de les Illes Balears

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University of New Mexico



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To my parents

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FOREWORD

This is the foreword to the book.

PREFACE

This is an example preface. This is an example preface. This is an example preface.
This is an example preface.

R. K. WATTS

Durham, North Carolina
September, 2007

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From Dr. Jay Young, consultant from Silver Spring, Maryland, I received the initial push to even consider writing this book. Jay was a constant “peer reader” and very welcome advisor during this year-long process.

To all these wonderful people I owe a deep sense of gratitude especially now that this project has been completed.

G. T. S.

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AEC	Atomic Energy Commission
OSHA	Occupational Health and Safety Commission
SAMA	Scientific Apparatus Makers Association

GLOSSARY

NormGibbs	Draw a sample from a posterior distribution of data with an unknown mean and variance using Gibbs sampling.
pNull	Test a one sided hypothesis from a numerically specified posterior CDF or from a sample from the posterior
sintegral	A numerical integration using Simpson's rule

SYMBOLS

- A Amplitude
- $\&$ Propositional logic symbol
- a Filter Coefficient

- \mathcal{B} Number of Beats

INTRODUCTION

CATHERINE CLARK, PHD.
Harvard School of Public Health
Boston, MA, USA

The era of modern began in 1958 with the invention of the integrated circuit by J. S. Kilby of Texas Instruments [1]. His first chip is shown in Fig. I. For comparison, Fig. I.2 shows a modern microprocessor chip, [4].
This is the introduction. This is the introduction. This is the introduction. This is the introduction. This is the introduction. This is the introduction. This is the introduction.

$$ABC\mathcal{D}\mathcal{E}\mathcal{F}\alpha\beta\Gamma\Delta\sum_{def}^{abc} \tag{I.1}$$

REFERENCES

1. J. S. Kilby, "Invention of the Integrated Circuit," *IEEE Trans. Electron Devices*, **ED-23**, 648 (1976).
2. R. W. Hamming, *Numerical Methods for Scientists and Engineers*, Chapter N-1, McGraw-Hill, New York, 1962.
3. J. Lee, K. Mayaram, and C. Hu, "A Theoretical Study of Gate/Drain Offset in LDD MOSFETs" *IEEE Electron Device Lett.*, **EDL-7**(3). 152 (1986).

PART I

SUBMICRON SEMICONDUCTOR MANUFACTURE

CHAPTER 1

THE SUBMICROMETER SILICON MOSFET

The sheer volume of answers can often stifle insight...The purpose of computing is insight, not numbers.

—Hamming [2]

1.1 Here is a normal section

Here is some text.

1.1.1 This is the subsection

Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text.

1.1.1.1 This is the subsubsection Here is some text after the subsubsection. Here is some text after the subsubsection. Here is some text after the subsubsection. Here is some text after the subsubsection.

This is the paragraph Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text. Here is some normal text.

1.2 Tips On Special Section Heads

Here are some things you can do for a special section head.

1.3 Break Long Section heads with double backslash

Here is some normal text. Here is some normal text. Here is some normal text.

1.4 Here is a Section Title

See this section head for information on how to explicitly break lines in table of contents.

1.5 How to get lower case in section head: pH

Here is some normal text. Here is some normal text. Here is some normal text.

1.6 How to use a macro that has both upper and lower case parts:

V_{Txyz}

See the top of this file where the definition and box were set.

1.7 Equation

For optimal vertical spacing, no blank lines before or after equations

$$\alpha\beta\Gamma\Delta \tag{1.1}$$

as you see here.

CHAPTER 2

FIRST EDITED BOOK SAMPLE CHAPTER TITLE

G. ALVAREZ AND R. K. WATTS

Carnegie Mellon University, Pittsburgh, Pennsylvania

2.1 Here is a normal section

Here is some text.

CHAPTER 3

SECOND EDITED BOOK SAMPLE CHAPTER TITLE

GEORGE SMEAL, PH.D.¹, SALLY SMITH, M.D.² AND STANLEY KUBRICK¹

¹AT&T Bell Laboratories Murray Hill, New Jersey

²Harvard Medical School, Boston, Massachusetts

3.1 Sample Section

Here is some sample text.

3.2 Example, Figure and Tables

EXAMPLE 3.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

illustration here

Figure 3.1 Short figure caption.

Figure 3.2 Oscillograph for memory address access operations, showing 500 ps address access time and superimposed signals of address access in 1 kbit memory plane.

Table 3.1 Small Table			
one	two	three	four
C	D	E	F

Table 3.2 Effects of the two types of $\alpha\beta \sum_B^A$ scaling proposed by Dennard and co-workers^{a,b}

Parameter	κ Scaling	κ, λ Scaling
Dimension	κ^{-1}	λ^{-1}
Voltage	κ^{-1}	κ^{-1}
Currant	κ^{-1}	λ/κ^2
Dopant Concentration	κ	λ^2/κ

^aRefs. 19 and 20.

^b $\kappa, \lambda > 1$.

3.2.1 Side by Side Tables and Figures

Space for figure...

Figure 3.3 This caption will go on the left side of the page. It is the initial caption of two side-by-side captions.

Space for second figure...

Figure 3.4 This caption will go on the right side of the page. It is the second of two side-by-side captions.

The command `\sidebyside{ }{ }` works similarly for tables:

Table 3.4 Table Caption			
A	B	C	D
a	second little	sample	table

```
\begin{table}
\sidebyside{\caption{Table Caption}\label{tab1}
first table}
{\caption{Table Caption}\label{tab2} second table}
\end{table}
```

```
\begin{figure}
\sidebyside{\vskip<dimen>\caption{fig caption}\label{fig1}}
{\vskip<dimen>\caption{fig caption}\label{fig2}}
\end{figure}
```

This is a sample algorithm.

```

state_transition algorithm {
  for each neuron  $j \in \{0, 1, \dots, M-1\}$ 
  {
    calculate the weighted sum  $S_j$  using Eq. (6);
    if  $(S_j > t_j)$ 
      {turn ON neuron;  $Y_1 = +1$ }
    else if  $(S_j < t_j)$ 
      {turn OFF neuron;  $Y_1 = -1$ }
    else
      {no change in neuron state;  $y_j$  remains unchanged;}
  }
}

```

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This is a sample of extract or quotation.

1. This is the first item in the numbered list.
 2. This is the second item in the numbered list. This is the second item in the numbered list. This is the second item in the numbered list.
- This is the first item in the itemized list.
 - This is the first item in the itemized list. This is the first item in the itemized list. This is the first item in the itemized list.

This is the first item in the itemized list.

This is the first item in the itemized list. This is the first item in the itemized list. This is the first item in the itemized list.

PROBLEMS

3.1 For Hooker's data, Problem 1.2, use the Box and Cox and Atkinson procedures to determine a appropriate transformation of PRES in the regression of PRES on TEMP. find $\hat{\lambda}$, $\tilde{\lambda}$, the score test, and the added variable plot for the score. Summarize the results.

3.2 The following data were collected in a study of the effect of dissolved sulfur on the surface tension of liquid copper (Baes and Killogg, 1953).

$x = \text{Weight \% sulfur}$		$Y = \text{Decrease in Surface Tension}$ (dynes/cm), two Replicates	
0.	034	301	316
0.	093	430	422
0.	30	593	586

- a) Find the transformations of X and Y sot that in the transformed scale the regression is linear.
- b) Assuming that X is transformed to $\ln(X)$, which choice of Y gives better results, Y or $\ln(Y)$? (Sclove, 1972).
- c) In the case of α_1 ?
- d) In the case of α_2 ?

3.3 Examine the Longley data, Problem 3.3, for applicability of assumptions of the linear model.

3.4 In the case of Γ_1 ?

3.5 In the case of Γ_2 ?

EXERCISES

3.1 For Hooker's data, Exercise 1.2, use the Box and Cox and Atkinson procedures to determine a appropriate transformation of PRES in the regression of PRES on

TEMP. find $\hat{\lambda}$, $\tilde{\lambda}$, the score test, and the added variable plot for the score. Summarize the results.

3.2 The following data were collected in a study of the effect of dissolved sulfur on the surface tension of liquid copper (Baes and Killogg, 1953).

$x = \text{Weight \% sulfur}$	$Y = \text{Decrease in Surface Tension}$	
	(dynes/cm), two Replicates	
0. 034	301	316
0. 093	430	422
0. 30	593	586

- Find the transformations of X and Y so that in the transformed scale the regression is linear.
- Assuming that X is transformed to $\ln(X)$, which choice of Y gives better results, Y or $\ln(Y)$? (Sclove, 1972).
- In the case of Δ_1 ?
- In the case of Δ_2 ?

3.3 Examine the Longley data, Problem 3.3, for applicability of assumptions of the linear model.

3.4 In the case of Γ_1 ?

3.5 In the case of Γ_2 ?

3.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 4

HOME

4.1 Sample Section

Here is some sample text.

4.2 Example, Figure and Tables

EXAMPLE 4.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

4.3 Algorithm

This is a sample algorithm.

4.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 5

OVERVIEW

5.1 Sample Section

Here is some sample text.

5.2 Example, Figure and Tables

EXAMPLE 5.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

5.3 Algorithm

This is a sample algorithm.

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5.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 6

ENVIRONMENT SETUP

6.1 Sample Section

Here is some sample text.

6.2 Example, Figure and Tables

EXAMPLE 6.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

6.3 Algorithm

This is a sample algorithm.

6.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 7

BASIC SYNTAX

7.1 Sample Section

Here is some sample text.

7.2 Example, Figure and Tables

EXAMPLE 7.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

7.3 Algorithm

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7.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 8

VARIABLE TYPE

8.1 Sample Section

Here is some sample text.

8.2 Example, Figure and Tables

EXAMPLE 8.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

8.3 Algorithm

This is a sample algorithm.

8.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 9

BASIC OPERATOR

9.1 Sample Section

Here is some sample text.

9.2 Example, Figure and Tables

EXAMPLE 9.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

9.3 Algorithm

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9.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 10

DESICION MAKING

10.1 Sample Section

Here is some sample text.

10.2 Example, Figure and Tables

EXAMPLE 10.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

10.3 Algorithm

This is a sample algorithm.

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10.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 11

LOOP

11.1 Sample Section

Here is some sample text.

11.2 Example, Figure and Tables

EXAMPLE 11.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

11.3 Algorithm

This is a sample algorithm.

11.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 12

NUMBERS

12.1 Sample Section

Here is some sample text.

12.2 Example, Figure and Tables

EXAMPLE 12.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

12.3 Algorithm

This is a sample algorithm.

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12.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 13

STRINGS

13.1 Sample Section

Here is some sample text.

13.2 Example, Figure and Tables

EXAMPLE 13.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

13.3 Algorithm

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13.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 14

LISTS

14.1 Sample Section

Here is some sample text.

14.2 Example, Figure and Tables

EXAMPLE 14.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

14.3 Algorithm

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14.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 15

TUPLES

15.1 Sample Section

Here is some sample text.

15.2 Example, Figure and Tables

EXAMPLE 15.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

15.3 Algorithm

This is a sample algorithm.

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15.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 16

DICTIONARY

16.1 Sample Section

Here is some sample text.

16.2 Example, Figure and Tables

EXAMPLE 16.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

16.3 Algorithm

This is a sample algorithm.

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16.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 17

DATE TIME

17.1 Sample Section

Here is some sample text.

17.2 Example, Figure and Tables

EXAMPLE 17.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

17.3 Algorithm

This is a sample algorithm.

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17.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 18

FUNCTIONS

18.1 Sample Section

Here is some sample text.

18.2 Example, Figure and Tables

EXAMPLE 18.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

18.3 Algorithm

This is a sample algorithm.

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18.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 19

MODULES

19.1 Sample Section

Here is some sample text.

19.2 Example, Figure and Tables

EXAMPLE 19.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

19.3 Algorithm

This is a sample algorithm.

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19.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 20

FILES I/O

20.1 Sample Section

Here is some sample text.

20.2 Example, Figure and Tables

EXAMPLE 20.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

20.3 Algorithm

This is a sample algorithm.

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20.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 21

EXCEPTIONS

21.1 Sample Section

Here is some sample text.

21.2 Example, Figure and Tables

EXAMPLE 21.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

21.3 Algorithm

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21.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 22

CLASSESS/OBJECT

22.1 Sample Section

Here is some sample text.

22.2 Example, Figure and Tables

EXAMPLE 22.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

22.3 Algorithm

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22.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 23

REG EXPRESSION

23.1 Sample Section

Here is some sample text.

23.2 Example, Figure and Tables

EXAMPLE 23.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

23.3 Algorithm

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23.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 24

CGI PROGRAMMING

24.1 Sample Section

Here is some sample text.

24.2 Example, Figure and Tables

EXAMPLE 24.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

24.3 Algorithm

This is a sample algorithm.

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24.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 25

DATABASES ACCESS

25.1 Sample Section

Here is some sample text.

25.2 Example, Figure and Tables

EXAMPLE 25.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

25.3 Algorithm

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25.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 26

NETWORKING

26.1 Sample Section

Here is some sample text.

26.2 Example, Figure and Tables

EXAMPLE 26.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

26.3 Algorithm

This is a sample algorithm.

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26.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 27

SENDING EMAIL

27.1 Sample Section

Here is some sample text.

27.2 Example, Figure and Tables

EXAMPLE 27.1 Optional Example Name

Use Black's law [Equation (6.3)] to estimate the reduction in useful product life if a metal line is initially run at 55°C at a maximum line current density.

27.3 Algorithm

This is a sample algorithm.

27.4 Summary

This is a summary of this chapter. Here are some references: [?], [?].

CHAPTER 28

PYTHON MULTITHREAD PROGRAMMING

Menjalankan beberapa *thread* mirip dengan menjalankan beberapa program yang berbeda secara bersamaan, namun dengan manfaat berikut :

- Beberapa *thread* dalam proses berbagi ruang data yang sama dengan benang induk dan karena dapat saling berbagi informasi atau berkomunikasi satu sama lain dengan lebih muda daripada jika prosesnya terpisah
- *thread* terkadang disebut proses ringan dan tidak membutuhkan banyak memori atas, mereka lebih murah daripada proses.

Sebuah *thread* memiliki permulaan, urutan eksekusi dan sebuah kesimpulan. Ini memiliki pointer perintah yang melacak dari mana dalam konteksnya saat ini berjalan.

- Hal ini dapat dilakukan sebelum *pre-empted (inturrupted)*
- Untuk sementara dapat ditunda sementara *thread* lainnya yang sedang berjalan ini disebut unggul.

28.1 Memulai Thread Baru

Untuk melakukan *thread* lain, perlu memanggil metode berikut yang tersedia dimodul *thread* :

```
Thread.start_new_thread (function, args [, kwargs] )
```

Pemanggilan metode ini memungkinkan cara cepat dan tepat untuk membuat *thread* baru di linux dan window.

Pemanggilan metode segera kembali dan anak *thread* dimulai dan fungsi pemanggilan dengan daftar *args* telah berlalu. Saat fungsi kembali ujung *thread* akan berakhir.

Disini, *args* adalah tuple argumen. Gunakan tuple kosong untuk memanggil fungsi tanpa melewati argumen. *Kwargs* adalah kamus opsional argumen kata kunci. Contoh :

```
#!/usr/bin/python
```

```
Import thread
```

```
Import time
```

```
# Define a function for the thread
```

```
Def print_time (threadName, delay):
```

```
    Count = 0
```

```
    While count < 5:
```

```
        Time.sleep(delay)
```

```
        Count += 1
```

```
        Print " %s : %s " % (threadName, time.ctime(time.time()))
```

```
# Create two thread as follows
```

```
try:
```

```
    thread.start_new_thread(print_time, ( "Thread-1 ", 2, ))
```

```
    thread.start_new_thread(print_time, ( "Thread-2 ", 4, ))
```

```
except:
```

```
    print "Error: unable to start thread "
```

```
while 1:
```

```
    pass
```

Bila kode diatas dieksekusi, maka menghasilkan hasil sebagai berikut :

```
Thread-1 : Thu Jan 22 15:42:17 2009
```

```
Thread-1 : Thu Jan 22 15:42:19 2009
```

```
Thread-2 : Thu Jan 22 15:42:19 2009
```

Thread-1 : Thu Jan 22 15:42:21 2009

Thread-2 : Thu Jan 22 15:42:23 2009

Thread-1 : Thu Jan 22 15:42:23 2009

Thread-1 : Thu Jan 22 15:42:23 2009

Thread-1 : Thu Jan 22 15:42:25 2009

Thread-2 : Thu Jan 22 15:42:27 2009

Thread-2 : Thu Jan 22 15:42:31 2009

Thread-2 : Thu Jan 22 15:42:35 2009

Meskipun sangat efektif untuk benang tingkat rendah, namun modul *thread* sangat terbatas dibandingkan dengan modul yang baru.

28.2 Modul Threading

Modul threading yang lebih baru disertakan dengan Python 2.4 memberikan jauh lebih kuat, dukungan tingkat tinggi untuk *thread* dari modul *thread* dibahas pada bagian sebelumnya.

The *threading* modul mengekspos semua metode dari *thread* dan menyediakan beberapa metode tambahan :

- **threading.activeCount()**

Mengembalikan jumlah objek *thread* yang aktif

- **threading.currentThread()**

Mengembalikan jumlah objek *thread* dalam kontrol benang pemanggil

- **threading.enumerate()**

Mengembalikan daftar semua benda *thread* yang sedang aktif

Selain metode, modul *threading* memiliki *thread* kelas yang mengimplementasikan *threading*. Metode yang disediakan oleh *thread* kelas adalah sebagai berikut :

- **run()**

Metode adalah titik masuk untuk *thread*

- **start()**
Metode dimulai *thread* dengan memanggil metode run
- **join([time])**
Menunggu benang untuk mengakhiri
- **isAlive()**
Metode memeriksa apakah *thread* masih mengeksekusi
- **getName()**
Metode mengembalikan nama *thread*
- **setName()**
Metode menetapkan nama *thread*

28.3 Membuat Thread Menggunakan Threading Modul

Untuk melaksanakan *thread* baru menggunakan *threading* harus melakukan hal berikut :

Mendefinisikan subclass dari *thread* kelas

Menimpa `_init_ (self [args])` metode untuk menambahkan argumen tambahan

Menimpa `run(self[args])` metode untuk menerapkan apa *thread* harus dilakukan ketika mulai

Setelah membuat baru *thread* subclass, dapat membuahkan sebuah instance dari itu dan kemudian memulai *thread* baru dengan menerapkan `start()`, yang ada gilirannya panggilan `run()` metode.

Contoh :

```
#!/usr/bin/python
```

```
import threading
```

```
import time
```

```
exitFlag = 0
```

```
class myThread (threading.Thread):
    def _init_(self, threadID, name, counter) :
        threading.Thread._init_(self)
        self.threadID = threadID
        self.name = name
```

```

        self.counter = counter
def run (self) :
    print "Starting " + self.name
    print _time(self.name, self.counter, 5)
    print "Exiting " + self.name

def print _time(threadName, delay, counter):
while counter:
    if exitFlag:
        threadName.exit()
    time.sleep(delay)
    print " %s: %s " % (threadName, time.ctime(time.time()))
counter -= 1

# Create new threads
thread1 = myThread(1, "Thread-1 ", 1)
thread2 = myThread(2, "Thread-2 ", 2)

# Start new threads
thread1.start()
thread2.start()
print "Exiting Main Thread "
```

Ketika kode diatas dijalankan, menghasilkan hasil sebagai berikut:

```

Starting Thread-1
Starting Thread-2
Exiting Main Thread
Thread-1 : Thu Mar 21 09:10:03 2013
Thread-1 : Thu Mar 21 09:10:04 2013
Thread-2 : Thu Mar 21 09:10:04 2013
Thread-1 : Thu Mar 21 09:10:05 2013
Thread-2 : Thu Mar 21 09:10:06 2013
Thread-1 : Thu Mar 21 09:10:07 2013
Exiting Thread-1
Thread-2 : Thu Mar 21 09:10:08 2013
Thread-2 : Thu Mar 21 09:10:10 2013
Thread-2 : Thu Mar 21 09:10:12 2013
Exiting Thread=2
```

28.4 Sinkronisasi Thread

Threading modul disediakan dengan Python termasuk sederhana untuk menerapkan mekanisme bahwa memungkinkan untuk menyinkronkan *thread* penguncian.

Sebuah kunci baru dibuat dengan memanggil *lock()* metode yang mengembalikan kunci baru.

The *acquire (blocking)* metode objek kunci baru digunakan untuk memaksa *thread* untuk menjalankan serempak. Opsional *blocking* parameter memungkinkan untuk mengontrol apakah *thread* menunggu untuk mendapatkan kunci.

Jika *blocking* diatur ke 0, *thread* segera kembali dengan nilai 0 jika kunci tidak dapat diperoleh dan dengan 1 jika kunci dikuaisisi. Jika pemblokiran diatur ke 1, blok dan menunggu kunci yang akan dirilis.

The *release()* metode objek kunci baru digunakan untuk melepaskan kunci ketika tidak lagi diperlukan.

Contoh:

```
#!/usr/bin/python
```

```
import threading
import time
```

```
class myThread (threading.Thread):
    def _init_(self, threadID, name, counter):
        threading.Thread._init_(self)
        self.threadID = threadID
        self.name = name
        self.counter = counter
    def run(self)
        print "Starting " + self.name
        # Get lock to synchronize threads
        ThreadLock.acquire()
        print _time(self.name, self.counter, 3)
        # Free lock to realease next thread
        ThreadLock.release()
```

```
Def print _time(threadName, delay, counter):
    while counter:
        time.sleep(delay)
        print " %s: %s " % (threadName, time.ctime(time.time()))
        counter -= 1
    threadLock = threading.Lock()
    threads = []
```

```
# Create new threads
thread1 = myThread(1, "Thread-1,1 )
thread2 = myThread(2, "Thread-2,2 )
```

```
# Start new Threads
thread1.start()
thread2.start()
```

```
# Add threads to thread list
threads.append(thread1)
thread2.append(thread2)

# Wait for all threads to complete
for t in threads:
    t.join()
print "Exiting Main thread "
```

Bila kode diatas dieksekusi, maka menghasilkan sebagai berikut :

```
Starting Thread-1
Starting Thread-2
Thread-1: Thu Mar 21 09:11:28 2013
Thread-1: Thu Mar 21 09:11:29 2013
Thread-1: Thu Mar 21 09:11:30 2013
Thread-2: Thu Mar 21 09:11:32 2013
Thread-2: Thu Mar 21 09:11:34 2013
Thread-2: Thu Mar 21 09:11:36 2013
Exiting Main Thread
```

28.5 Multithreaded Antrian Prioritas

The queue modul memungkinkan untuk membuat objek antrian baru yang dapat menampung jumlah tertentu item. Ada metode berikut untuk mengontrol antrian :

- **get()**
Menghapus dan mengembalikan item dari antrian
- **put()**
Menambahkan item ke antrian
- **qsize()**
Mengembalikan jumlah item yang saat ini dalam antrian
- **empty()**
Mengembalikan benar jika antrian kosong jika tidak, salah
- **full()**

Mengembalikan benar jika antrian penuh jika tidak, salah

Contoh:

```
#!/usr/bin/python
```

```
import Queue
import threading
import time
```

```

exitFlag = 0

class myThread (threading.Thread):
    def _init_(self, threadID, name, q):
        threading.Thread.__init__(self)
        self.name = name
        self.q = q
    def run(self):
        print "Starting " + self.name
        process_data(self.name, self.q)
        print "Exiting " + self.name

def process_data(threadName, q):
    while not exitFlag:
        queueLock.acquire()
        if not workQueue.empty():
            data = q.get()
            queueLock.release()
            print " %s processing %s " % (threadName, data)
        else:
            queueLock.release()
            time.sleep(1)

threadList = [ "Thread-1 ", "Thread-2 ", "Thread-3 "]
nameList = [ "One ", "Two ", "Three ", "Four ", "Five "]
queueLock = threading.Lock()
workLock = Queue.Queue(10)
threads = []
threadID = 1

# Create new threads
For tName in threadList:
    thread = myThread(threadID, tName, workQueue)
    thread.start()
    thread.append(thread)
    threadID +=1

# Fill the queue
queueLock.acquire()
for word in nameList:
    workQueue.put(word)
queueLock.release()

# Wait for queue to empty
while not workQueue.empty():
    pass

```

```
# Notify threads its time to exit
exitFlag = 1

# Wait for all threads to complete
For t in threads:
    t.join()
print "Exiting Main Thread "
```

Bila kode diatas dieksekusi, maka menghasilkan hasil sebagai berikut:

```
Starting Thread-1
Starting Thread-2
Starting Thread-3
Thread-1 processing One
Thread-2 processing Two
Thread-3 processing Three
Thread-1 processing Four
Thread-2 processing Five
Exiting Thread-3
Exiting Thread-1
Exiting Thread-2
Exiting Main Thread
```


CHAPTER 29

XML PROCESSING

XML adalah bahasa open source portable yang memungkinkan pemrogram mengembangkan aplikasi yang dapat dibaca oleh aplikasi lain, terlepas dari sistem operasi dan bahasa pengembangnya.

Apa itu XML?

Extensible Markup Language (XML) adalah bahasa markup seperti HTML atau SGML. Ini direkomendasikan oleh World Wide Web Consortium dan tersedia sebagai standar terbuka.

XML sangat berguna untuk mencatat data berukuran kecil dan menengah tanpa memerlukan tulang punggung berbasis SQL.

29.1 Arsitektur Parsing XML dan API

Perpustakaan standar Python menyediakan seperangkat antarmuka minimal tapi berguna untuk bekerja dengan XML.

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Dua API yang paling dasar dan umum digunakan untuk data XML adalah antarmuka SAX dan DOM.

API sederhana untuk XML (SAX): mendaftarkan panggilan kemali untuk acara yang diminati dan kemudian membiarkan parser berjalan melalui dokumen. Ini berguna bila dokumen berukuran besar atau memiliki keterbatasan memori, ini memarsing file tidak pernah tersimpan dalam memori.

API Document Objek Model (DOM): ini adalah rekomendasi World Wide Web Consortium dimana keseluruhan file dibaca ke memori dan disimpan dalam bentuk hierarkies (tree-based) untuk mewakili semua fitur dokumen XML.

SAX jelas tidak bisa memproses informasi secepat DOM saat bisa terjadi dengan file besar. Di sisi lain, menggunakan DOM secara eksklusif benar-benar dapat membunuh sumber daya, terutama jika digunakan pada banyak file kecil.

SAX hanya bisa dibaca sementara DOM mengizinkan perubahan pada file XML. Kedua API yang berbeda ini saling melengkapi satu sama lain, tidak ada alasan mengapa tidak dapat menggunakannya untuk proyek besar.

Contoh:

```

<collection shelf="New Arrivals">
  <movie title="Enemy Behind">
    <type>War, Thriller</type>
    <format>DVD</format>
    <year>2003</year>
    <rating>PG</rating>
    <stars>10</stars>
    <description>Talk about a US-Japan war</description>
  </movie>
  <movie title="Transformers">
    <type>Anime, Science Fiction</type>
    <format>DVD</format>
    <year>1989</year>
    <rating>R</rating>
    <stars>8</stars>
    <description>A schientific fiction</description>
  </movie>
  <movie title="Trigun">
    <type>Anime, Action</type>
    <format>DVD</format>
    <episodes>4</episodes>
    <rating>PG</rating>
    <stars>10</stars>
    <description>Vash the Stampede!</description>
  </movie>
  <movie title="Ishtar">
    <type>Comedy</type>

```

```

;format;VHS;/format;
;rating;PG;/rating;
;stars;2;/stars;
;description;Viewable boredom;/description;
;/movie;
;/collection;

```

29.2 Parsing XML dan API SAX

SAX adalah antarmuka standar untuk parsing XML berbasis event. Parsing XML dengan SAX umumnya mengharuskan untuk membuat *ControlHandler* dengan subclassing `xml.sax.controlhandler`.

ControlHandler menangani tag dan atribut tertentu dari XML. Objek *ControlHandler* menyediakan metode untuk menangani berbagai aktivitas parsing. Parsing memanggil metode *ControlHandler* saat memarsing file XML.

Metode *startDocument* dan *endDocument* disebut awal dan akhir setiap elemen. Jika parsing tidak dalam mode namespace, metode *startElement* (tag attribute) dan *endElement* (tag) dipanggil. Jika tidak, metode yang sesuai *startElementNS* dan *endElementNS* dipanggil. Disini, tag adalah tag elemen dan atribut adalah atribut.

Berikut ini metode penting untuk memahami sebelum melanjutkan ke materi berikutnya :

Metode *make_parser*

Metode berikut membuat objek parsing baru dan mengembalikannya. Objek parsing dibuat akan menjadi tipe parsing pertama yang ditemukan sistem.

```
xml.sax.make_parser([parser_list])
```

Berikut adalah detail parameternya :

Parser *_list* : pilihan argumen yang terdiri dari daftar parsing untuk digunakan yang semuanya harus menerapkan metode *make_parse*

Metode *parser*

Metode berikut membuat parsing SAX dan menggunakannya untuk mengurai dokumen

```
xml.sax.parser(xmlfile, contenthandler[, errorhandler])
```

Berikut adalah detail dari parameternya:

- *Xmlfile*

Ini adalah nama file XML yang bisa dibaca.

- *ContentHandler*

Ini harus menjadi objek *ContentHandler*

- *ErrorHandler*

Jika ditentukan, *errorhandler* harus menjadi objek *ErrorHandler* SAX

- Metode *parseString*

Membuat parsing SAX dan mengurai string XML yang ditentukan :

```
xml.sax.parsestring(xmlstring, contenthandler[, errorHandler])
```

Berikut ini adalah detail nama dan parameter :

XMLstring

Nama dari string yang bisa dibaca

ContentHandler

Menjadi objek ContentHandler

ErrorHandler

Menjadi objek ErrorHandler SAX

Contoh :

```
#!/usr/bin/python
```

```
import xml.sax
```

```
class MovieHandler( xml.sax.ContentHandler ):
```

```
    def __init__(self):
        self.CurrentData = ""
        self.type = ""
        self.format = ""
        self.year = ""
        self.rating = ""
        self.stars = ""
        self.description = ""
```

```
# Call when an element starts
```

```
def startElement(self, tag, attributes):
```

```
    self.CurrentData = tag
    if tag == "movie":
        print "*****Movie*****"
        title = attributes["title"]
        print "Title:", title
```

```
# Call when an element ends
```

```
def endElement(self, tag):
```

```
    if self.CurrentData == "type":
        print "Type:", self.type
```

```

elif self.CurrentData == "format":
    print "Format:", self.format
elif self.CurrentData == "year":
    print "Year:", self.year
elif self.CurrentData == "rating":
    print "Rating:", self.rating
elif self.CurrentData == "stars":
    print "Stars:", self.stars
elif self.CurrentData == "description":
    print "Description:", self.description
self.CurrentData = ""

# Call when a character is read
def characters(self, content):
    if self.CurrentData == "type":
        self.type = content
    elif self.CurrentData == "format":
        self.format = content
    elif self.CurrentData == "year":
        self.year = content
    elif self.CurrentData == "rating":
        self.rating = content
    elif self.CurrentData == "stars":
        self.stars = content
    elif self.CurrentData == "description":
        self.description = content

if ( __name__ == "__main__" ):

    # create an XMLReader
    parser = xml.sax.make_parser()
    # turn off namespaces
    parser.setFeature(xml.sax.handler.feature_namespaces, 0)

    # override the default ContextHandler
    Handler = MovieHandler()
    parser.setContentHandler( Handler )

    parser.parse("movies.xml")

```

Ini akan menghasilkan hasil sebagai berikut:

*****Movie*****

*****Movie*****

Title: Enemy Behind

Type: War, Thriller
 Format: DVD
 Year: 2003
 Rating: PG
 Stars: 10
 Description: Talk about a US-Japan war
 *****Movie*****
 Title: Transformers
 Type: Anime, Science Fiction
 Format: DVD
 Year: 1989
 Rating: R
 Stars: 8
 Description: A schientific fiction
 *****Movie*****
 Title: Trigun
 Type: Anime, Action
 Format: DVD
 Rating: PG
 Stars: 10
 Description: Vash the Stampede!
 *****Movie*****
 Title: Ishtar
 Type: Comedy
 Format: VHS
 Rating: PG
 Stars: 2
 Description: Viewable boredom

29.3 Parsing XML dan API DOM

Document Object Model (DOM) adalah API lintas bahasa dari World Wide Web Consortium (W3C) untuk mengakses dan memodifikasi dokumen XML.

DOM sangat berguna untuk aplikasi akses acak. SAX hanya memungkinkan melihat satu bit dokumen sekaligus. Jika melihat satu elemen SAX, tidak memiliki akses ke yang lain.

Berikut adalah cara termudah untuk memuat dokumen XML dengan cepat dan membuat objek minidom menggunakan modul xml.dom. Objek minidom menyediakan metode parsing sederhana yang dengan cepat memuat pohon DOM dari file XML.

Contoh frase memanggil fungsi parsing (file [,parsing]) dari objek minidokumen untuk mengurai file XML yang ditunjuk oleh file ke objek pohon DOM.

```
#!/usr/bin/python

from xml.dom.minidom import parse
import xml.dom.minidom
```

```
# Open XML document using minidom parser
DOMTree = xml.dom.minidom.parse("movies.xml")
collection = DOMTree.documentElement
if collection.hasAttribute("shelf"):
    print "Root element : %s" % collection.getAttribute("shelf")

# Get all the movies in the collection
movies = collection.getElementsByTagName("movie")

# Print detail of each movie.
for movie in movies:
    print "*****Movie*****"
    if movie.hasAttribute("title"):
        print "Title: %s" % movie.getAttribute("title")

    type = movie.getElementsByTagName('type')[0]
    print "Type: %s" % type.childNodes[0].data
    format = movie.getElementsByTagName('format')[0]
    print "Format: %s" % format.childNodes[0].data
    rating = movie.getElementsByTagName('rating')[0]
    print "Rating: %s" % rating.childNodes[0].data
    description = movie.getElementsByTagName('description')[0]
    print "Description: %s" % description.childNodes[0].data
```

Ini akan menghasilkan hasil sebagai berikut :

```
Root element : New Arrivals
*****Movie*****
Title: Enemy Behind
Type: War, Thriller
Format: DVD
Rating: PG
Description: Talk about a US-Japan war
*****Movie*****
Title: Transformers
Type: Anime, Science Fiction
Format: DVD
Rating: R
Description: A schientific fiction
*****Movie*****
Title: Trigun
Type: Anime, Action
Format: DVD
Rating: PG
Description: Vash the Stampede!
*****Movie*****
Title: Ishtar
Type: Comedy
Format: VHS
Rating: PG
Description: Viewable boredom
```

29.4 Membangun Parsing Document XML menggunakan Python

Python mendukung untuk bekerja dengan berbagai bentuk markup data terstruktur. Selain mengurai `xml.etree.ElementTree` mendukung pembuatan dokumen XML yang terbentuk dengan baik dari objek elemen yang dibangun dalam aplikasi. Kelas elemen digunakan saat sebuah dokumen diurai untuk mengetahui bagaimana menghasilkan bentuk serial dari isinya kemudian dapat ditulis ke sebuah file.

Untuk membuat instance elemen gunakan fungsi elemen constructor dan `SubElement()` pabrik.

Import `xml.etree.ElementTree` as `xml`

```
filename = "/home/abc/Desktop/test_xml.xml"
root = xml.Element("Users")
userelement = xml.Element("user")
root.append(userelement)
Bila menjalankan ini, akan menghasilkan sebagai berikut :
```

```
<Users>
  <user>
  <user>
</Users>
```

Tambahkan anak-anak pengguna

```
Uid = xml.SubElement(userelement, "uid")
Uid.text = "1"
```

```
FirstName = xml.SubElement(userelement, "FirstName")
FirstName.text = "testuser"
```

```
LastName = xml.SubElement(userelement, "LastName")
LastName.text = "testuser"
```

```
Email = xml.SubElement(userelement, "Email")
Email.text = "mailto:testuser@test.comtestuser@test.com"
```

```
state = xml.SubElement(userelement, "state")
state.text = "xyz"
```

```
location = xml.SubElement(userelement, "location")
location.text = "abc"
```

```
tree = xml.ElementTree(root)
with open(filename, "w") as fh:
    tree.write(fh)
```

Pertama buat elemen root dengan menggunakan fungsi `ElementTree`. Kemudian membuat elemen pengguna dan menambahkannya ke root. Selanjutnya membuat `SubElement` dengan melewati elemen pengguna (`userelement`) ke `SubElement` beserta namanya seperti `"FirstName"`. Kemudian untuk setiap `SubElement` tetapkan

properti teks untuk memberi nilai. Di akhir, membuat *ElementTree* dan menggunakannya untuk menulis XML ke file.

Jika menjalankan ini akan menjadi sebagai berikut :

```
<?xml version="1.0" encoding="UTF-8" ?>
<Users>
  <user>
    <uid>1</uid>
    <FirstName>testuser</FirstName>
    <LastName>testuser</LastName>
    <Email>mailto:testuser@test.com %3cEmailtestuser@test.com</Email>
  </user>
  <state>xyz</state>
  <location>abc</location>
</Users>
```

Parsing XML Documen :

```
import xml.etree.ElementTree as ET
tree = ET.parse(Your_XML_file_path)
root = tree.getroot()
```

Disini *getroot()* akan mengembalikan elemen dari dokumen XML

```
<?xml version="1.0" language="SPA" ?>
<Users>
  <user>
    <uid>1</uid>
    <FirstName>testuser</FirstName>
    <LastName>testuser</LastName>
    <Email>testuser@tes.com</Email>
    <state>xyz</state>
    <location>abc</location>
  </user>
</Users>
```


APPENDIX A

This is an appendix without a title.

Here is a math test to show the difference between using Computer Modern math fonts and MathTimes math fonts. When MathTimes math fonts are used the letters in an equation will match TimesRoman italic in the text. (*g, i, y, x, P, F, n, f, etc.*) Caligraphic fonts, used for *ABC* below, will stay the same in either case.

$$g_i(y|f) = \sum_x P(x|F_n) f_i(y|x) \mathcal{ABC} \quad (\text{A.1})$$

where $g_i(y|F_n)$ is the function specifying the probability an object will display a value y on a dimension i given F_n the observed feature structure of all the objects.

CHAPTER 2

GUI PROGRAMMING

Python menyediakan berbagai pilihan untuk mengembangkan antarmuka pengguna grafis (GUIs). Yang paling tercantum dibawah ini :

- Tkinter
Antarmuka Python ke toolkit Tk GUI dikirimkan dengan Python.
- wxPython
antarmuka Python open-source untuk wxWindows
- Jpython
Port Python untuk java yang memberikan Python script akses tanpa batas ke perpustakaan kelas java pada mesin lokal

2.1 Tkinter Pemrograman

Tkinter adalah perpustakaan GUI standar untuk Python. Python bila dikombinasikan dengan Tkinter menyediakan cara yang mudah dan cepat untuk mem-

buat aplikasi GUI. Tkinter menyediakan antarmuka berorientasi objek yang kuat untuk toolkit Tk GUI.

Membuat aplikasi GUI menggunakan Tkinter adalah tugas yang mudah. Yang diperlukan adalah melakukan langkah-langkah sebagai berikut :

- Mengimpor Tkinter modul
- Buat jendela utama aplikasi GUI
- Tambahkan satu atau lebih dari widget tersebut diatas ke aplikasi GUI
- Masukkan acara loop utama untuk mengambil tindakan terhadap setiap peristiwa dipicu oleh pengguna

Contoh :

```
#!/usr/bin/python

import Tkinter
top = Tkinter.Tk()
# Code to add widgets will go here...
top.mainloop()
```

2.2 Tkinter Widget

Tkinter menyediakan berbagai kontrol seperti tombol, label dan kotak teks yang digunakan dalam aplikasi GUI. Kontrol ini biasanya disebut widget.

Saat ini ada 15 jenis widget di Tkinter. Menyajikan widget serta penjelasan singkat pada tabel berikut ini :

Beberapa atribut umum sebagai ukuran, warna dan font ditentukan. Berikut adalah beberapa atribut standar :

Ukuran

Berbagai panjang, lebar, dan dimensi lain dari widget digambarkan dalam banyak unit yang berbeda seperti :

- Jika menetapkan dimensi ke integer diasumsikan dalam piksel
- Menentukan unit dengan menentukan dimensi untuk string yang berisi sejumlah diikuti oleh :

Tkinter mengungkapkan panjang sebagai integer jumlah pik-

sel. Berikut ini adalah daftar pilihan panjang umum:

- `borderwidth`
Lebar batas yang memberikan tampilan tiga dimensi untuk widget
- `highlightthickness`
Lebar puncak persegi panjang ketika widget memiliki fokus
- `padX padY`
Ruang tambahan widget dari manajer tata letak luar minimum widget perlu menampilkan isinya di x dan y arah
- `selectborderwidth`
Lebar perbatasan tiga dimensi disekitar dipilih item widget
- `wraplength`
Panjang garis maksimum untuk widget yang melakukan kata membungkus
- `height`
Tinggi diinginkan widget
- `underline`

Indeks karakter untuk menggarisawahi dalam teks widget

- width
- Lebar diinginkan widget

Warna

Tkinter memiliki warna dengan string. Ada dua cara umum untuk menentukan warna di Tkinter, yaitu :

- Menggunakan string menentukan proporsi merah, hijau dan biru didigit heksadesimal. Misalnya " #ffff " putih, " #000000 " hitam dan " #000fff00 " hijau.
- Menggunakan lokal standar nama warna . warna-warna "white ", "black ", "green " dan "magenta " akan selalu tersedia.

Pilihan warna umum :

- activebackground
Warna latar belakang untuk widget ketika widget aktif
- activeforeground
Warna depan untuk widget ketika widget aktif
- background
Merepresentasikan sebagai *bg*
- disableforeground
Warna depan untuk widget ketika widget dinonaktifkan
- foreground
Merepresentasikan *fg*
- highlightbackground
Warna latar belakang dari daerah puncak ketika widget memiliki fokus
- highlightcolor
Warna depan dari wilayah puncak ketika widget memiliki fokus
- selectbackground
Warna latar belakang untuk item yang dipilih dari widget
- selectforeground
Warna depan untuk item yang dipilih dari widget
- Font
Sebagai tupel yang elemen pertama adalah keluarga font diikuti dengan string yang berisi satu atau lebih gaya pengubah tebal, miring, garis bawah dan overstrike.
Contoh :

- ("Helvetica ", "16 "-point Helvetica biasa
- ("Times ", "24 ", "beranimiring ") untuk 24-point kali miring tebal

Dapat membuat "font object " dengan mengimpor modul tkFont dan menggunakan kelas konstruktor font nya :

```
Import tkFont
Font = tkFont.Font (option, ....)
```

Berikut adalah daftar pilihan :

- Family
Font nama keluarga sebagai string
- Size
Font tinggi sebagai integer dalam poin
- Weight
Bold untuk tebal, normal untuk berat badan secara teratur
- Slant
Italic untuk miring, roman untuk unslanted
- Underline
1 untuk teks yang digarisbawahi, 0 untuk normal
- Overstrike
1 untuk teks telak, 0 untuk normal
Jika berjalan di bawah X window system, dapat menggunakan salah satu nama font X. Sebagai contoh, font bernama " *-lucidatypewriter-medium-r-*-*-*140-*-*-* " adalah favorit fixed-width font penulis untuk digunakan pada layar.
- Jangkar
Jangkar digunakan untuk mendefinisikan mana teks diposisikan relatif terhadap titik acuan. Berikut adalah daftar kemungkinan konstanta yang dapat digunakan :
- NW
- N
- NE
- W
- TENGAH
- E
- SW
- S

- SE

Jika menggunakan tengah sebagai jangkar tek, tek akan ditengahkan horizontal dan vertikal disekitar titik referensi.

Jangkar NW akan posisi teks sehingga titik referensi bertepatan dengan laut sudut kotak berisi teks

Jangkar W akan pusat teks secara vertikal disekitar titik referensi dengan tepi kiri kotak teks yang melewati titik itu dan sebagainya.

Jika membuat widget kecil didalam bingkai besar dan menggunakan jangkar = SE pilihan, widget akan ditempatkan disudut kanan bawah gambar. Jika menggunakan anchor = N sebaliknya widget akan dipusatkan disepanjang tepi atas.

Gaya relief

Widget mengacu pada efek 3-D simulasi terbaru disekitar bagian luar widget. Berikut adalah daftar konstanta yang mungkin dapat digunakan untuk atribut:

- Datar
- Dibesarkan
- Cekung
- Alur
- Punggung bukit

Contoh :

```
From Tkinter import *
```

```
Import Tkinter
```

```
top = Tkinter.Tk()
```

```
B1 = Tkinter.Button(top, text= "FLAT ", relief=FLAT)
```

```
B2 = Tkinter.Button(top, text= "RAISED ", relief=RAISED)
```

```
B3 =Tkinter.Button(top, text= "SUNKEN ", relief=SUNKEN)
```

```
B4= Tkinter.Button(top, text= "GROOVE ", relief=GROOVE)
```

```
B5= Tkinter.Button(top, text= "RIDGE ", relief=RIDGE)
```

```
B1.pack()
```

```
B2.pack()
```

```
B3.pack()
```

```
B4.pack()
```

```
B5.pack()
```

```
top.mainloop()
```

Bitmaps

Ada beberapa jenis bitmap yang tersedia, diantaranya:

- Kesalahan
- Gray75
- Gray50
- Gray12
- Jam Pasir

- Info
- Questhead
- Perantanyaan
- Peringatan

Contoh:

```
From Tkinter import *
Import Tkinter
```

```
Top = Tkinter.Tk()
```

```
B1 = Tkinter.Button(top, text = "error ", relief=RAISED, n bitmap= "error ")
```

```
B2 = Tkinter.Button(top, text = "hourglass ", relief=RAISED, n bitmap= "hourglass ")
```

```
B3 = Tkinter.Button(top, text = "info ", relief=RAISED, n bitmap= "info ")
```

```
B4 = Tkinter.Button(top, text = "question ", relief=RAISED, n bitmap= "question ")
```

```
B5 = Tkinter.Button(top, text = "warning ", relief=RAISED, n bitmap= "warning ")
```

```
B1.pack()
```

```
B2.pack()
```

```
B3.pack()
```

```
B4.pack()
```

```
B5.pack()
```

```
top.mainloop()
```

Kursor

Berikut daftar menarik :

- Panah
- Lingkaran
- Jam
- Menyebrang
- Dotbox
- Bertukar
- Fluer
- Jantung
- Manusia
- Tikus
- Bajak laut
- Tamah

- Antar jemput
- Perekat
- Laba-laba
- Kaleng semprot
- Bintang
- Target
- Tcross
- Melakukan perjalanan
- Menonton

Contoh :

```
From Tkinter import *
Import Tkinter
```

```
Top = Tkinter.Tk()
```

```
B1 = Tkinter.Button(top, text = "circle ", relief=RAISED, n bitmap= "circle ")
B2 = Tkinter.Button(top, text = "plus ", relief=RAISED, n bitmap= "plus ")
```

```
B1.pack()
B2.pack()
top.mainloop()
```

2.3 Manajemen Geometri

Semua widget tkinter memiliki akses ke metode manajemen geometri tertentu, yang memiliki tujuan menggorganisir widget diseluruh wilayah widget induk. Tkinter mengekspos kelas manager geometri berikut :

- Metode the *pack()*
Manajer geometri ini mengatur widget diblok sebelum menempatkan mereka di widget induk
- Metode the *grid()*
Manajer geometri ini mengatur widget dalam struktur tabel seperti di widget induk
- Metode the *place()*

Manajer geometri ini mengatur widget dengan menempatkan dalam posisi tertentu dalam widget induk

2.4 Manfaat Tkinter

Tkinter sangat sederhana. Berikut manfaat Tkinter dibandingkan GUI toolkit :

- Tkinter mudah diakses oleh siapa saja. (Accessibilty) Tkinter merupakan toolkit yang ringan dan satu-satunya solusi GUI yang paling sederhana untuk Python sampai saat ini. Cukup menuliskan beberapa baris kode Python untuk membuat aplikasi GUI sederhana dengan Tkinter. Untuk menambahkan komponen baru pada Tkinter, dapat membuatnya dalam kode Python atau menambahkan paket ekstensi seperti Pmw, Tix, atau ttk.
- Tkinter mudah digunakan di semua platform (Portability) Sebuah program Python yang dibangun menggunakan Tkinter dapat berjalan dengan baik di semua platform sistem operasi seperti Microsoft Windows, Linux, dan Macintosh. Dan dari segi tampilan window, akan terlihat sama dengan standar platform yang digunakan.
- Tkinter selalu tersedia di Python (Availability) Tkinter merupakan modul standar pada pustaka Python. Sebagian besar paket instalasi Python sudah langsung berisi Tkinter. Khusus untuk beberapa distro Linux, perlu menambahkan paket Tkinter secara terpisah. Pada Windows, bisa langsung menggunakan Tkinter sesaat setelah menginstal paket instalasi Python.
- Dokumentasi Tkinter sangat LUAR BIASA (Documentation) Python (plus Tkinter) ini bersifat open-source, maka banyak sekali komunitas-komunitas yang membahas Python dan Tkinter dan bisa belajar dan bertanya langsung dengan para ahli.

Operator	width= Penjelasan
– Button	Menampilkan tombol dalam aplikasi
– Canvas	Menggambar bentuk seperti garis, oval, poligon dan persegi panjang dalam aplikasi
– Checkbutton	Menampilkan sejumlah pilihan sebagai kotak centang. Pengguna dapat memilih beberapa pilihan pada suatu waktu
– Entry	Menampilka bidang garis teks tunggal untuk menerima nilai-nilai dari pengguna
– Frame	Wadah untuk mengatur widget lainnya
– Label	Memberikan keterangan garis single untuk widget lainnya. Hal ini berisi gambar
– Listbox	Menyediakan daftar pilihan kepada pengguna
– Menubutton	Menampilkan menu dalam aplikasi
– Menu	Memberikan berbagai perintah untuk pengguna. Perintah-perintah ini terkandung di dalam MenuButton
– Message	Menampilkan bidang teks multiline untuk menerima nilai-nilai dari pengguna
– RadioButton	Menampilkan sejumlah pilihan sebagai tombol radio. Pengguna dapat memilih hanya satu pilihan pada suatu waktu
– Scale	Menyediakan widget slide
– Scrollbar	Menambah kemampuan bergulir ke berbagai widget seperti kotak daftar
– Text	Menampilka teks dalam beberapa garis
– Toplevel	Menyediakan wajah jendela terpisah
– PanedWindow	Wadah yang mengandung sejumlah panel disusun horizontal atau vertikal
– LabelFrame	Wadah widget sederhana. Bertindak sebagai spacer atau wajah untuk layout jendela kompleks
– TkMessageBox	Menampilkan kotak pesan dalam aplikasi
– Spinbox	Memilih sejumlah tetap nilai-nilai

width=	
Karakter	Penjelasan
c	Sentimeter
i	Inci
m	Milimeter
p	Poin printer (1/72 ")

APPENDIX C

ALTERNATE REFERENCE STYLES

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