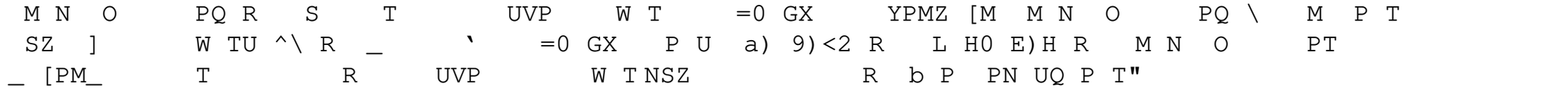
<sf_alpha@yahoo.com>

<thep@links.nectec.or.th>

<poon-v@fedu.uec.ac.jp>


```
        !"#         $%%&'!&'!#          ()) '*
+,,-./0 12 3
        $"!         $%%&'!&'!#          ()) '*
+,,-./0 14.3
        5"!'(62&7  5!!5'!$'$8           9:;/<(./
-=>?14.3@62'A2<2/92&/BC6/:4D

-.09E)FG 2 4E29F60729 .)H 4) G92 -./0 </ IG/I2" -.09H0<< F)*26 /7)G4 92440 I -./0 0  / J
/((<0F/40) 9K :)6 7)4. F) 9)<2 / E L H0 E)H" -.09E)FG 2 4 /<9) (6)*0E29 9) 2 0 :)6 /40) /7)G4
-./0 0 (<2 2 4/40) :)6 E2*2<)(269" B-./0 =/ IG/I2D
```

$"#"b P T [PM
$"f" M
$"8"N] Q _ U MW\
5"[PM_ T W T]M_ M
5"$"_ g [M Z N M W T
5"5"R\P _ W T
5"d" W TNSZ] Y M _
5"#" UVP R Q [PM] _ W TB 5"!D
5"f" \R [PM_ NSZ W TB-./0=)F/<2D
5"8"[PM_ MY `
d" W T =0 GXC094607G40) 9 `
d"$"=0 GXC094607G40) N N W T
d"5"-./0hX42 90) NSZ =0 GXC094607G40) Z `
d"d" WY T =0 GXC094607G40) 9MY `
#" UVP W T =0 GXa) 9)<2
#"$"=0 GXa) 9)<2-))<9
#"5" RN b R R M
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#"#" _ MM] Y M _
#"f" UVP i 0F)E2
#"8"^\ R _ a) 9)<2
#"j"]SR S _ _
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f"$" RN b R R M
f"5" [PM_ BR\P _ D
f"d"^\ R _ L>0 E)H9
f"#"k'C29l4)(h *06) 2 4BkChDR ^\ R _NSZ kCh 5#
f"f">0 E)Hm/ /I26 `
f"8"?n) 2R ^\ R _NSZ ?) 2
f"j"]SR S _ _
8" ^\ R _ =0 GX N N W T
8"$"_ g `R UVP W T
8"5"-./0=)F/<2 ?nia=076/6J
8"d"=07-./0
j"[PM_ MY `
j"$" UVP W TNSZ =/-2L
j"5"-./0=0 GX>)6l0 I?6)G(
j"d"] T =0 GX[M W T
j"#"] MY ` T [PM
&"o _' M BpqrD
s _

Y M Q -./0’tu>-u W_ W P\ \ _ Z T\ R P B ‘ d \ [s [T MT PD
R T W T =0 GX W P P Z P W_ R P R T R W_ _ M N
]SR SZ YM] _YMMM _ Tb_Q W P M -./0’tu>-u_ \ v w UZ_

NSZ [M =0 GX -./0’tu>-u O P Q \e =0 GX -./0’tu>-u M ‘
W\ eN _ o _W P :4(xyy:4(" 2F42F")6"4.y(G7y-./0=0 GXyF*9yE)Fy4./0’.)H4)
1:4(xy y :4(" 2F42F")6"4.y (G7y -./0=0 GXy F*9y E)Fy 4./0’.)H4)3 NSZ C6/:4 R M Z P
N _ oZ W PQ q) J)G9 az{ [M <0 GX"4./0" 24 U yE)F9y4./0’.)H4)]

!"#$%&!#

-.09 E)FG 2 4 09 F)(J60I.42E BFD 5!!$ @./44/) CG/ IE/6/ / E 09 E094607G42E G E26 4.2 426 9): 4.2
=0 GX C)FG 2 4/40) @6)|2F4 B=C@D <0F2 92K 94/42E 72<)H"

i <299)4.26H092 94/42EK =0 GX tu>-u E)FG 2 49 /62 F)(J60I.42E 7J 4.206 629(2F40*2 /G4.)69" =0 GX
tu>-u E)FG 2 49 /J 72 62(6)EGF2E / E E094607G42E 0 H.)<2)6 0 (/64K 0 / J 2E0G (.J90F/<
)6 2<2F46) 0FK /9 <) I /9 4.09 F)(J60I.4)40F2 09 624/0 2E) /<< F)(029" a) 26F0/< 62E094607G40) 09
/<<)H2E / E 2 F)G6/I2E} .)H2*26K 4.2 /G4.)6 H)G<E <0l2 4) 72)40:02E): / J 9GF. E094607G40) 9"

q<< 46/ 9</40) 9K E260*/40*2 H)6l9K)6 /II62I/42 H)6l9 0 F)6()6/40 I / J =0 GX tu>-u E)FG 2 49
G94 72 F)*262E G E26 4.09 F)(J60I.4)40F2" -./4 09K J)G /J)4 (6)EGF2 / E260*/40*2 H)6l :6) /
tu>-u / E 0 ()92 /EE040) /< 629460F40) 9) 049 E094607G40) " hXF2(40) 9 4) 4.292 6G<29 /J 72
I6/ 42E G E26 F264/0 F) E040) 9} (<2/92 F) 4/F4 4.2 =0 GX tu>-u F))6E0 /4)6 /4 4.2 /EE6299 I0*2
72<)H"

c 9.)64K H2 H09. 4) (6))42 E0992 0 /40)): 4.09 0 :)6 /40) 4.6)GI. /9 / J F./ 2<9 /9 ()9907<2"
t)H2*26K H2 E) H09. 4) 624/0 F)(J60I.4) 4.2 tu>-u E)FG 2 49K / E H)G<E <0l2 4) 72)40:02E):
/ J (</ 9 4) 62E094607G42 4.2 tu>-u9"

c: J)G ./*2 / J ~G2940) 9K (<2/92 F) 4/F4 <linux-howto@metalab.unc.edu>

’ ($)* !

i92 F) 42 49): 4.09 E)FG 2 4 F/ 72 (6)EGF2 266)69)6 E/ /I29 4) J)G6 9J942 " n) <0/70<04J :)6 4.2
F) 42 49): 4.09 E)FG 2 49 F/ 72 /FF2(42E" i92 4.2 F) F2(49K 2X/ (<29 / E)4.26 F) 42 4 /4 J)G6
)H 609l" -.2 /G4.)69 ./*2) 629() 9070<04J :)6 / J E/ /I2 / Ey)6 266)6 F/G92E 7J G90 I
0 :)6 /40) 9): 4.09 E)FG 2 4"

q<< F)(J60I.49 /62 .2<E 7J 4.206 7J 4.206 629(2F40*2)H 269K G <299 9(2F0:0F/<<J)42E)4.26H092" i92):
/ 426 0 4.09 E)FG 2 4 9.)G<E)4 72 62I/6E2E /9 /::2F40 I 4.2 */<0E04J): / J 46/E2 /6l)6 926*0F2
/6l"

+ , –. /01. 23,4 2

_ =0 GX -./0'tu>-u P R R [T ^ T <poon-v@fedu.uec.ac.jp>
w RbTR +,,4./0 1.44(xy y HHH":2EG"G2F"/F"|(y +,,-./0y 3 B NY MWYYY T D
R Y M Q W_ _ \ \ _ _ R P b_Q M -./0'tu>-u _ \ v UZ_
Y MUZP [P [M W T =0 GX w W P P Z P W_ R P

\\ ] P PR Q \e [T UZ_ _ [PM_ UZ_ _ [P _ W_ S 5!! R T W P \ T Q
=0 GXE)F B{?m=D _ _ \e C)F))l BLm=D w N_ TR BR ew wPM _ D
R PM [MM T oP _ [PMb M N P

Q ` R P _ -./0 tu>-u M O [M] s
<thep@links.nectec.or.th> w S[P _ Z -h R =0 GX -=h w \e tu>-u
O Q w M T SZ] W T NSZ =0 GX] ` w e \e N Z [M tu>-u
O P U TZ

=0 GX -./0'tu>-u O P [T ^ T <sf_alpha@yahoo.com>
w b_W_ W P [T] T b_ e] PM T UZP] s
<thep@links.nectec.or.th> \e] [T P TM] UVP[PM_ [M [U -./0'tu>-u O Q
_ R \e] V T QNM P Tw -./0 tu>-u O PQ W P bTR -./0 =0 GX >)6l0 I
?6)G(x C)FG 2 4/40) 1.44(xy y <0 GX"4./0" 24y E)F93] """

N P T PM [M] s @)64GIG292 tu>-u o R_PQ M W_ MM R _ e \e R U S Z [PM R M
`[M tu>-u O P]

5 678 9:3;9:<.=8>?

MT U Z Q S]

@ ; />

-./0 tu>-u O P R M PM _ [PMb P W_ _ e PMT R oP QM e s RQP UZP
P T] oP _ [PM N MR MT W MT UZPUN [PM_ T M W _ eR S_ W P]
T N_M R Q _ G(E/42 MTR] WZ e[P MT Z YM\ ] R M b_ [T
tu>-u O Pb_ eMT R] \ $ M]

#

A 0:? 9:1 B.: C–29D E: /:>F,

qEE q<< m0990 I –.0 I9 4) a) (<242"

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

’ =8>27G3;9:<.; H I F < 1>2J0.3/> K

N PQ o _ g T W T]M_ M _ P UVP [PM_ W T R
RN [PM_ UZP Z_ N_ PM o B=)F/<0,/40) D NSZ W T P T

’ 2 / L =>? M / .> ;I H I F <

’ %N A’O

1.44(xy y HHH" 2F42F")6"4.y 04’94/ E/6E9y 94E85!y 94E85!".4 3 Z YM T
W\ Z N N_M" \e _ g [M Z N M Ba./6924 a)E2D UVP]M_ M
w SZ ^ TNS _ g M N Z _Z YM N_M" B–./0 c E6G940/< {4/ E/6E9 c 9404G42 1–c{c3D" –c{’
85! \e Z N M M _Q Z N M [M c{u’8#8 w \e Z N M R j 704] P T
‘q{acc

_ g –c{’85! R]YM –c{’85! 5f5% B$%&8D w W P_ R PW[_ _M U \ 5fdd \e –c{’85!
5fdd B$%%!D Y M _ YPMZ N UZPNM] PM c{uycha 5!55
R Z N M P Z_ T] Z_YM _

\ QQ ?ni a <076/6J B?=c aD W PN N _ g –c{’85! U UVP
NSZ PM o \ W TR W T TU PVY M 4.;–t B4.;–t"–c{’85!D

’ ’ %N PP@Q

Z N M R & 704 [M –c{’85!] P T Z N M U c{uycha &&f% _ Y M Q
N_M" B–c{cD P W_ \ N] _NS eQ_ U P UZP –c{’85! \e _ g Q W P] Q
UN W PU c{uycha &&f% R Y MZP U M N Z _ ‘ Z _ UVP Z N W T
__ g _ [P PW P UN W PU N $$ B@/64 $$D [M _ g c{uycha &&f%
o R_PQ _ \ N UVP_ g P Y M Q W T P Q R
_ PM _ \ M M [P P T R U TZ e_ b UZP c{uycha &&f% @/64 $$
b U \ V _c{u R \ \e U \ T\ " "5f##

’ + %N OA5A

f

^\ R _U \ QQ W P _MM R UZPN _ oUVPW PZ T B G<40<0 IG/<D ^ TUVP _ g [M M
[M c{uycha $!8#8 1.44(xy y / G709"ElGGI"Ely -a$y {a5y >?5y 3 Bi 0*269/< mG<40')F424 a)E2E
a./6/F426 {24 ' ia{D w \e NSZ e [PM_ M N U &704 BZ YM 7J42D
w M QMT U \ & 704 Z T ` M R PQ U VY M i 0F)E2 1.44(xy y HHH"G 0F)E2")6Iy 3
ia{ Z YM i-p'&

i 0F)E2 a) 9)640G W P M P [P _ M c{uycha Q SZ _ g c{uycha $!8#8
P[P NSZ \e _ g N U \ QQ i 0F)E2 a) 9)640G \e]s _
R \e b P] R _ b PR Q Z T ` \ N_ V U R SZ _ g T
i 0F)E2 P T

NSZ [PM_ MY ` T i 0F)E2 Z YM ia{ w N _ oM W PQ i-p'& / E i 0F)E2
pqr :)6 i 0Xy=0 GX 1.44(xy y HHH"F<"F/ "/F"Gly Il5fy G 0F)E2".4 <3]

NSZ Z N M ` [M W T i 0F)E2 R c{uycha $!8#8'$ P W Po Q UZP
MT U S !X!h!!'!X!hjp 1.44(xy y F./649"G 0F)E2")6Iy >27y i!h!!".4 <3
w _ T S M Z_YM U _ g -c{'85! U S !Xq!'!Xpp]

NSZ [PM_ R T M T MY ` T Z N M WY T R _ g [M V M W TMY
` N _ oM W PQ q /)4/42E 62:262 F2 4) 4.2 -./0 0 (<2 2 4/40) 9
1.44(xy y HHH"0 24"F)"4.y FJ726F<G7y 460 y 4./062:y 3 [M s s g] R T _ [PM_ MY
` _ _M U Z [PM [PM_ MY ` P]

'' R,8 J02JKH I F <

'' %N P'O

%N P'O M S> 2>; P'O \e _ g [M R\P _ W T w SZ ^ T NS _ g M N Z _
BN_M"D NSZ _ g U \ QQ]YM -c{'&5! 5fd& B$%%fD
1.44(xy y HHH" 2F42F")6"4.y 04'94/ E/6E9y 94E&5!y 94E&5!".4 3

2 / L %N P'O / .R ;1S> $ %N P'O '@+ T QPPU \R [M R\P _ U -c{'&5! 5fd$
Q Z_YM R\P _ R _s UVP _ W T M_ _ SZ _ g
UVP R [PM_ W T w SZ ^ T -./0 q@c a) 9)640G B-q@caD w _ VY M >-- Z YM "
BT M_ Q D w W P_ SZ N _ _UZP -c{'&5! 5fd$ Y MUZP\ _ \ _
UVP _ W P Z Q _ \ _ g >-- 5"! R\P _ [M -c{'&5! 5fd$
_ _ _ _ 5"! eW P SZ \e _ g U -c{'&5! 5fd8 B$%%dD

! "#
w _ _UZPN _ o _ M W P R W PTP T M P T R MT W e _
R\P _ _ g -c{'&5! 5fd& T] Z_YM [M _ YM P Z_

R _ SZ _ g MT UZP M 5"! ^ T M M W T
PM MT \ _ R UVPN

R\P _ [M -c{'&5! P T] UVP \R \ _ R R\P _ R _s
T R _ R PW[e PMT P R\P _ [M]M_ M \e -c{'&5! U \ QQ
Q T] T R\P _ R _s N M R]YM\ ^V P W_ W P] _ T_
R R Q W_ _ UVPU \ QQ P P R \ ^ P _ W P T
R N P \ YM R PMT N P [P Q Q T UVP [M P R\P _

NSZ [PM_ MY ` _ _ _ P \R R\P _ MY ` N _ oM W PQ
.44(xyyHHH" 2F42F")6"4.y04'94/ E/6E9yl2J7)/6E;</J)G4y4./0'l2J".4
1.44(xy y HHH" 2F42F")6"4.y 04'94/ E/6E9y l2J7)/6E;</J)G4y 4./0'l2J".4 3]

'+ H I F < M 31 S:>?J02JK

T W_ _ [PM_]

'5 ; DV8? RG-C B; =8>1. 2H I F < T. ' OU

-./0 q@c a) 9)640G W P SZ _ g N [PM_ R Q T W T T >-- 5"! Z YM
" 5"! B D w \ QQ]YM -c{'$f88 5f#$ B$%%&D NSZ T M T N _ o W PQ >-- 5"!
-./0 c (G4 / E uG4(G4 m24.)E
1.44(xy y HHH"0 24"F)"4.y FJ726F<G7y 460 y 4./062:y H445y F./6'F</99"(E:3 [PM_ T
UVP __ g W PQ -./0 94/ E/6E0,/40) / E 0 (<2 2 4/40) 9
1.44(xy y HHH" 2F42F")6"4.y 04'94/ E/6E9y 4./094E"(E:3 ^ T
<thep@links.nectec.or.th> R Rb UN 1.44(xy y HHH" 2F42F")6"4.y 04'94/ E/6E9y 4./094E;46"(E:3
U \R "(E:

'@ 7,R =8>27G M H I F < T)* U

'@ 1. 23,4 ;G T% # ! # * W # X P U

% # ! # * W # B T T M ` 0$& D ]YM s [M ^\ R _ N _ o\ N `
U S UZP Z_ PM o ` W P V N _ oUVP W PZ T
N _ o \ T Z T UZP Z_ N_ R _U P
Z YMNSZ Z YM PM o P W PU R W_ PM S N P ^\ R _[P UZ_ B)'62F) (0<2D
^ T S Q M T \R _ PM o B=)F/<2D R \ UZP [P PM o Z YM
B=)F/<0,/40) D

'@' ; , /.DM83=8 ; 8>?Y0: T)* W # X* O U

j

$%&'()'+)%* B T T M ‘ <$! D \e UVPQ [PM_ U R PM o V R\ [PM_
‘ RN b Z YM Q [PM_ U ‘ =)F/<0,/40) _ Z T R R MM W\ V
@u{cL =)F/<2K L =)F/<2 [P MT] _ Z_ N_U UVP [M ^\ R _ P ‘ w S [M
Q M T[PM_ Q \R [PM_ PM o B=)F/<2 C2:0 040) D

’@+ 7,R =8>27G 8>?Y0: T)* U

)* BM ^ R] D Z YM \R [PM_ PM o \e N Z [M c 426 /40) /<0,/40) B0$& D R
=)F/<0,/40) B<$! D Y MUZP^\ R _ ‘ N _ o Q RN R Q [PM_ U R R PM o
W PMT o PM Z_ N_ =)F/<2 ‘ [M R R PM o Q _ s \e N ‘
w N _ o _ [P W\U =)F/<0,/40) ‘ W P R R =)F/<2 Q \e M N Q
\R [PM_ PM o M QQ _W\o [PM_ NSZ Q [PM] _ w wPM V Q T]S R MY ‘

=)F/<0,/40) U =0 GX N UZ Q M T Z ‘]YM @u{cL =)F/<2 w MT U a =076/6J V
?=c a w U @u{cL =)F/<2 S Q UVP] R\ B=a;"""D w Q \ M P TN ‘ P

Z[UVPNSZ SZ =)F/<2 P Z_ B_ b UZP_ \ T =)F/<2 O P Z_ D
w Q _ SZ W P Z P

]Z UVPNSZ SZ =)F/<2 Q UVP U s =)F/<2 O W_ _ SZ

] Z ^]YM =)F/<2 Q UVPNSZ Q T M

] _‘^]YM =)F/<2 Q UVPNSZ QSR M

]a [^ Zb_]YM =)F/<2 Q UVPNSZ [PM_ T

][cad^b%]YM =)F/<2 Q UVPNSZ R PW[[

] %a^]YM =)F/<2 Q UVPNSZ [PM_ R

]a^NNZ\^]YM =)F/<2 Q UVPNSZ [PM] _ ‘

R T _ N [M [PM_ =)F/<2 M]YM

!]YM [PM_ [M Z NM]YM -c{’85! 5fdd

b !# !]YM [PM_ [M Z NM W T Z N i 0F)E2

M T_UVP]YM c{uycha $#8f5 w \e N M[T TQ @u{cL =uaq=h w \ M P T

]‘Z‘^b =)F/<2 Q UVPNSZ [

][Za^]YM =)F/<2 Q UVPNSZ \R VY MN

]Z((b^NN]YM =)F/<2 Q UVPNSZ MT

] ^ ^‘ [^]YM =)F/<2 Q UVPNSZ ^

]a^Ncb^a^[ ]YM =)F/<2 Q UVPNSZ

&

]e^bN% [N]YM=)F/<2 Q UVPNSZ M [M =)F/<2

’@5 7,R =8>27G 8>?Y0: H I F < T) * U

w NSZ W T e_ =)F/<2 MT U VY M 4.;-t \ QQ R UVPW PU Z NM -c{’85! Bc{uycha
&&f%’$$D R i-p’&

UVP \ N _ oUVP W P^ T SZ R\ =qn? \e 4.;-t Z YM R\ =)F/<0,/40)
PM w \ Q UVP Z N M -c{’85! oP PM UVP Z N M MY UZP SZ ^ TUN "
_ P T Z N M PM U \ QQ UVPW P]YM-c{’85! R i-p’&

NSZ [PM_ T -./0 =)F/<2 _ _N _ o W P .44(xyyHHH"<0 l9" 2F42F")6"4.y 4.2(y4.’<)F/<2y
1.44(xy y HHH"<0 l9" 2F42F")6"4.y 4.2(y 4.’<)F/<2y 3 ^ T] s s
Bw \ QQ \e b P R -./0=)F/<2 P U @u{cL R c{u=)F/<2 [M ?=c a P TD

’A =8>27G>S: f

[PM_ T _ g c-[M W T BR MY ‘D c-{4/ E/6E9) @G7 24 c :)6 /40) {26*269K nha-ha
1.44(xy y HHH" 2F42F")6"4.y 04’94/ E/6E9y 3"

cEx-./0’tu>-u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

+ H I F < ($#! g # $/:? f

+ ($#! g # 9: E H I F <

=0 GX C094607G40) MM R _ NSZ W T Z YMMM R _ UZPUVP W TW P
NSZ SZ] W TR UVPR M W TU C094607G40) ‘ N _ o
W PU Z [PM M ‘ W\[M M N P R NSZ L’>0 E)H9 N _ o [PM_ _ _W PQ Ww
.44(xyyHHH"<0 GX2/9J":59"F) w Q _]SM TR \ \ M NSZ R C094607G40) Z ‘ P T

+ ^

$),– $./012 !3456"178 VY M e_ ‘ [M =0 GX’-=h]YM =0 GX -./0 =/ IG/I2 hX42 90) 9 =0 GX’-=h
_ P Q \e =0 GX C094607G40) w W P _ -h B-./0 hX42 90) D W PR P Y MUZPN _ oN
N W TW P R U Z ‘ *$),– $. 96:; < "=6>? @ A B5C 5 < >?*
"D E =2F"G 4G H IGJ6 /KLMN+%O8 "= E B5CIDC"=6 B w e]YM =0 GX’-=h #"! N
[s [T tu>-u O PD =0 GX’-=h Q \ M P T^\ R __ _ T N N W T
R N _ o W T W P YM Q N_ s M P T

%

=0 GX’-=h W P ^ T _ -./0 =0 GX >)6l0 I ?6)G(1.44(xy y <0 GX"4./0" 243
^ T N N [M T]^ ^ T M e M N R]M_ M RZ V Z YM]] Bnha-ha ’
n/40) /< h<2F46) 0F9 / E a) (G426 -2F.)<)IJ a2 426D

=0 GX’-=h N _ ^Z W P :4(xyy:4(" 2F42F")6"4.y(G7y4./0<0 GXy09)y
1:4(xy y :4(" 2F42F")6"4.y (G7y 4./0<0 GXy 09)y 3 NSZ [PM_ MY ‘ R T M T [M =0 GX’-=h
_ P [PM_ i(E/42 N _ o _W P -./0 =0 GX >)6l0 I ?6)G(x =0 GX’-=h
1.44(xy y <0 GX"4./0" 24y <0 GX’4<23

+ ’ h &($i#

+00p C29l4)(=0 GX \e C094607G40) M Z MM R NSZ] W T R UVP W TW P V
w ^ T +0) c 426:/F2 QS N B[s [T t)H4) O PD]YM +00p C29l4)(j"!

T M T _ _ .44(xyyHHH",00:"F) y 1.44(xy y HHH",00:"F) y 3]

h j ($i# k O \e \ =0 GX NSZ C29l4)(Y M] W T M V UZ_ T] P
UVP W T M N _] c 426 24 q((<0F/40) K mG<40 2E0/ R _N
^ T_ o \ N] Q bTR UVP =0 GX R u(2 {)G6F2 {):4H/62 R Y MUZP =0 GX
\e YM NSZ T R b PN UQ Z] _ P P {):4H/62
MT o PM U] TM_ W P

_ x .44(xyyHHH",00:"F) y(6)EGF4y,00:jy

+ + l m*

W_ _ [PM_ T BR_PR U D [PM_ [M k/0H/< =0 GX W PQ .44(xyHHH"l/0H/<9):4H/62"F)
1.44(xy HHH"l/0H/<9):4H/62"F) 3

+ 5 d!

[PM_ [M G6/(./ =0 GX W PQ .44(xyy/<(./7)X"F) (9F0"7GG"/F"4.y
1.44(xy y /<(./7)X"F) (9F0"7GG"/F"4.y 3

+ @ a n! i P

m/ E6/l2 \e =0 GX E094607G40) TM T_ Z w U UZ_ ‘]YM &"$ NSZ U P
^\ R _NSZ SZ] ‘ P N _ UVP W TW P R ^\ R _NSZ SZ] ‘
e_ MMT PM_N M P T S L’>0 E)H9 NSZ R M Q _ PMT
eM QQ PM _ P T M w eN _ o] M R M _ Q m0F6)9):4 >0 E)H9 W P^ T
BoP _ [N o PM D

$!

[PM_ _ _[M m/ E6/l2 =0 GX W PQ .44(xyyHHH"<0 GX’ / E6/l2"F)
1.44(xy y HHH"<0 GX’ / E6/l2"F) 3 NSZ SZ] W T W PQ

+ A N%N

+’ ^ # $ M ($#! g # MG ; f

P’) .–+L M)% \e N Z [M ^] NY MW T B+,,-./0D _ P ^ T _ W T
i 0*26904J): h<2F46)’F) G 0F/40) 9 BihaD \ \ w _] _ T T _ Q UVP W TU Z T `
F) (G426 (</4:)6 ^ T ^\ R _ N [T T ` _o Q S M N R R
R M UZPR]] W\ ^ T]] Z P T N _ oRQ Q T^\ R _ M Z YMN \ M U `
T [PM MW\W P w oYM \e \ ^TV MT T

P’) .–+L M)% M /. \e N _ _[M =0 GX Y M _ N N W T U N F) 9)<2 R
L >0 E)H w –h P _B–h’ / 55D P o ^ T] s R] s W
V Q

M_ –./0 =0 GX >)6l0 I ?6)G(Q [M SR [M –./0 hX42 90) _ UVP ^ TUVPb MTW P Q
=0 GX’–=h w W P _^\ R _ R SZ] MT R P S \e R] Q B(/Fl/I2D R _W P
NSZ =0 GX C094607G40) Z ` UVP P [w T W_ N _ oUVP W TW PMT N_ s V
A2Et/4 =0 GX j"X m/ E6/l2 &"! C270/ R MY ` w –h Z PN _ o P R UVP W P
R M QQ _ T M T MT w PM M T SZ] R R PW[M MT P

NSZ –./0 hX42 90) N _ o ^Z W PQ :4(xyy:4(" 2F42F")6"4.y(G7y4./0<0 GXy9):4H/62y–h
1:4(xy y :4(" 2F42F")6"4.y (G7y 4./0<0 GXy 9):4H/62y –h3 [PM_ MY ` R T M T [M –h
_ P [PM_ i(E/42 _W P –./0 =0 GX >)6l0 I ?6)G(x –./0 hX42 90) 9
1.44(xy y <0 GX"4./0" 24y –h3

NSZ P] M W AhqCmh Z YM cn{–q== M _YM P
W Q M o P R SZ] MT M P T
w T M T _ _ V SZ] [M =0 GX R ^\ R _ ` N _ W PQ tu>–u O P
w Q MW\

++ H I FS < ($#! g # $ >S: f

–h P W_ N _ o S[P NSZ C094607G40) R M oP =0 GX C0946G704) UVPMT W_ _ –h
Q S[P _ O UZP M QQ ^Z ^\ R _ N Z YM {)G6F2 a)E2 [M ^\ R _ R [PM_
W ` Q –./0 =0 GX >)6l0 I ?6)G(Z YM M _ Q R] Q[M C094607G40) W P] T _ UVPW P
R M Q PM _ R PW[Bt/FlD ^\ R _ N Y MUZPN _ oUVP [M W P R S G0<E
UZ_ w e PM M T] _ P] _N _ o MN_]

$$

MT W e _] s eN _ oo _b P V T V T =0 GX R -h W PQ p)6G [M -./0 =0 GX
>)6l0 I ?6)G(1.44(xy y <0 GX"4./0" 24y HHH7)/6E3 R p)6G [M -./0<0 GXa/:2
1.44(xy y HHH"4./0<0 GXF/:2"F) 3 _ b P Q =0 GX Z T] PM_Q UZP
]S M T \ Z [M] s] Z YM_ [PM N MR M W eT] T oP] s\ -h R S \e
R] Q_ R UZP bTR W PT] W TM Z T P] M] sMT M P] S_ R] ZT _Y M T]

NSZ -./0 hX42 90) K {):4H/62 W T ` R {)G6F2 a)E2 N _ o ^Z W PQ
:4(xyy:4(" 2F42F")6"4.y(G7y4./0<0 GXy9):4H/62 1:4(xy y :4(" 2F42F")6"4.y (G7y 4./0<0 GXy 9):4H/623
NSZ [PM_ MY ` R T M T [M -h _ P [PM_ i(E/42 _W P -./0 =0 GX >)6l0 I
?6)G(x -./0 hX42 90) 9 1.44(xy y <0 GX"4./0" 24y 423

cEx -./0’tu>-u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

5 ; DV8? H I F < $ *

N PQ o SZ] T =0 GX a) 9)<2 V P R M Bpun-DK qamK {pmK
R\P _ R MY ` _o SZ] UZPUVP W T ^\ R _ S a) 9)<2 P T

5 $ * *$

=0 GX a) 9)<2 -))<9 \e R] Qw \ M P T^\ R _NSZ Q R SZ] T =0 GX
a) 9)<2 P QM R R\P _ w SZ] ` PM b ^\ R _[M =0 GX a) 9)<2 -))<9

>2 5 9?" H GH ;H9 G FE $) ,– Q% M%(L K’+’ 3R " # > F R S $) ,– Q% M%(L %%(M
3R 96" # BT14SH ;1G U >? VH $) ,– Q% M%(L %%(M 3R BT14" 1 H96 C; H $) ,–
Q% M%(L %%(M K’+’ W%%+ 3R 96<5 DHFC $LCTROOT *FSH G U B S " > H*
3R 96<G G B G <G 16 X)M+Y)Z,+)% "V

A2Et/4 x y<07yl7Ey

m/ E6/l2 x yG96y<07yl7Ey

{</FlH/62 x yG96y9./62y

C270/ x yG96y9./62y

MY ` x PM M]P Z w M QQ Z_YM E094607G40) U Z [P \ R P] Q _ ZPM
F) 9)<2:) 49 F) 9)<246/ 9 R l2J /(9 MT TU

-./0 =0 GX a) 9)<2 C/4/ w \e R] Q _ W QS \e NSZ UVP W T MT R P N _ o
^Z W PQ **N !# & # $ * o ## pX X * # #X $&] * X #) $ * X q**
UVP -./0 =0 GX a) 9)<2 C/4/ ^ T W\ UZP ^Z RS] F) 9)<2’E/4/’4./0
BF) 9)<2’E/4/’4./0’’XXXXX"4/6"I, R R U ZPM =a-Auu- B^ TUVP]SN **# !** ***-xzvf console-***

data-xxxxx.tar.gz ***$LCTROOT*** D R T _ (/Fl/I2 [M =0 GX a) 9)<2 -))<9
w W P R w UZPUVP l2J9J 9 U Z NM -c{’85! W P w T M T _ _ N _ o W P
Ww P]

oP W_ _ R] Q[M a) 9)<2 C/4/ NSZ =0 GX C094607G40) PUVPMT eN _ o YM ^Z W `
QS \e _ UVPW P V w T M T Q MW\

>? [;H5 VH $) ,– K)M+Y)Z,+)% 5 H VH W\] /WLX^’+ \’&N’_L]’ ’_LY8 V A2Et/4K m/ E6/l2
] sN _ o ^Z R] Q A@m [M a) 9)<2 -))<9 NSZ E094607G40) P ‘ BoP _ D R P R
G(I6/E2 ^ T **!** *-U* console-tools-xxxxx.i386.rpm W PQ Ww P
w R] Q PQ _ PM_ =0 GX a) 9)<2 -))<9 R w -./0 l2J9J R P _ P -./0 a) 9)<2 C/4/
P T

1 R –

] M UZPQ M _YM S Y M] _ [P UQR \PM \ Z M Q Q [P W P
]SR S \e \ ^TV _ Q MT Z ‘] x’D

5 ’ ; R B?6GRG–R / .> ;I

NSZ =0 GX a) 9)<2 QM S B{F622 a) 9)<2 Z YM z064G/< a) 9)<2D N _ o \ T
R M Z P QMW P NSZ z?q -2X4 Z YM {z?qyz?q p6/ 27G::26 a) 9)<2
R MT W e _ RN b T W_ N_ s Y M Q =0 GX k26 2<
P W_ N N [T [PM] _ w wPM R T U Bw W T e \e _] _w wPM U [T D
RN b M Q Q [T U T W_ Q \e T V sT N V
Q [T \e]

5 ’ R / .> ;I Tj #U RG– Z a

NSZ R] Q -./0 =0 GX a) 9)<2 C/4/ Q _ R M [T [P O NSZ UVP W T
R M -c{’85! P Z_ Z N M [M R M P -c{’85!’L w _
_ M NSZ M W\ P T R W P S UN NSZ T i 0F)E2 Z YM T {F622
p) 4 m/(B{pmD W PR P

Y MUZP RN b U &704 Z YM q{acc o PM P T PM _ UVP T
M NSZ RM]V Z YM T q((<0F/40) a./6924 m/(BqamD Y MUVPU R\ M R &704
\e i 0F)E2 R RN b R M UVP i 0F)E2 W Po PM P T w R M R W
qam Q _ PM_ R] Q -./0 =0 GX F) 9)<2 E/4/ R P V

oP W_ W P P R] Q -./0 a) 9)<2 C/4/ eN _ o ^Z W W PQ Ww _ R P
NSZ W R M UZP SW\W PU W M $LCTROOTyF) 9)<2F./69 R SW qam W\W PU
W M $LCTROOTyF) 9)<246/ 9

$d

5 ' ' ; DV8? R / .> ;I RG– Z a

U T UVPR M R qam UZPUVP]SN **) $ *) !$** *-f <font> -m <ACM>*
V oP PM T UVPR M Q W tis-phaisarn.f16.psf.gz R qam Q W
tis620.acm.gz eQ UVP]SN **) $ *) !$** *-f tis-phaisarn.f16 -m tis620*

]SN PQ T UVP R M Q W 409'(./09/6 ":$8"(9:"I, R qam Q W 40985!"/F "I,
U] T w W :) 4 Q MT U ZPM $LCTROOTyF) 9)<2:) 49 R qam Q MT U y
$LCTROOTF) 9)<246/ 9 w \e ZPM ^\ R _ SZ W P Bw [P MT R E094607G40) _ R P
NSZ T M T MY ` [M **) $ *) !$** **) $ *) !$** / (/I29
R Ww _ R P] D

5 '+ ; R B?6GD 7,R =8>27G M H I F <

U UVP \R [PM_ NSZ W T B-./0 =)F/<2D U RN b PM S \ R\ LANG
\e 4.;-t ^ TUVP]SN **!#** *LANG="th_TH"* Y M SZ UZPUVP W T

^\ R _ ` ^\ R _ \e N Bc 426 /40) /<0,/40) K 0$& D R
N _ oUVP \R [PM_ Z_ N_ PM o B=)F/<0,/40) K<$! D Q RN b \e W T
R UVP \R [PM_] Q \e U W T _ SZ W P B _ P ^\ R _ L'>0 E)H9D w U P
PM UVPR M W T _ P qam P T U a) 9)<2 Y MUZPRN b W Po PM
BZ Q SZ R P N _ o M W P ^ TUVP]SN **n #** Y M R P D SZ P M QUVPU
M ^\ R _ `UZPUVP \R R\P _ \e W TNSZ ^\ R _ P T

```
[sf_alpha@benja /]# date
##. 27 #.#. 2544
[sf_alpha@benja /]#
```

5 + ; =8>27G TR,8 J02JKU

5 + I $

=0 GX a) 9)<2 Q UVP l2J /(9 U T R R\ Z N W P Q R\P _ Bk2J7)/6E {F/ a)E2D
\ T \e Z_ T [Z N]SN [M R\P _ NSZ =0 GX k26 2< NSZ
^\ R _ S Q T k2J /(9 e]YM*** ni $** w \e N Z [M R] Q =0 GX a) 9)<2
-))<9

NSZ W l2J /(9 P \ Q UVP _N "l /(w TU Q \ M P T Z N[M \ _ Q R\P _
Bk2JF)E2D R Z N[M \ _ N _ Bk2J m)E0:0269D ` R N s
PUVPZ_ T [R]SN [M R\P _ NSZ k26 2< T l2J9J 9 w _Y M_ T l2J /(9
_ UVP *** ni $** eQ S R\ W R N s \e Z NR [PM_ Y MN UZP l26 2<

$#

5 + ’ ; /0B/ 8?RG–DV8? I $

l2J /(9 Q _ MT Z TR \ R P =0 GX P ‘ W\Q UVPW P O l2J /(9 UVP l2J9J 9
[M Z NM c{u’&&f%’$ NSZ l2J9J 9 [M Z NM R -c{’85! Q UVPW P =0 GX P
=0 GX a) 9)<2 -))<9 W P R w UZPUVP l2J9J 9 NSZ -c{’85! W PR P P w N _ o
^Z W PQ Ww P V R MT W e _ l2J /(9 PT W_ N _ oUVP U ^Z_ i 0F)E2 W P
l2J /(9 Z PQ UVP\ _ q<4?6 Z YM A0I.4’q<4 U \ T R M Q \e \ _MY
[P MT T M T [M R W l2J /(9 P T

oP W P P -./0 =0 GX a) 9)<2 C/4/ @/Fl/I2 _ U Z [PM M Z P PR P eQ _ W l2J /(9
NSZ R\P _ __ g -c{’&5! 5fd& B_M " &5! 5fd&D MT R P]YM 409&5!’d&"l /("I, Bw UVP
Z NM c{u’&&f%’$D w oP W_ W P P e ^Z _ W P V R P SW\W PU ZPM y
$LCTROOTl2J /(9y0d&8y~H264J N _ o T UVP l2J /(9 ^ TUVP]SN *** ni $** *<Keymapfile>*
V oP PM T UVP l2J /(9 Q W tis820-38.kmap.gz UZPUVP]SN *** ni $** *tis820-38*

]S N PQ T UVP l2J /(9 Q W 409’09)"l /("I, w W l2J /(9 Q MT U ZPM y
$LCTROOTl2J /(9y0d&8y~H264Jy w \e ZPM ^\ R _ SZ W P Bw [P MT R E094607G40)
_ R P D

5 5 ; J02JK>>; ?31 S:>?J02JKK

T W_ _ [PM_]

5 @ ; DV8? c) n

NSZ UVP i 0F)E2]YM \ UZP R N b R R\P _ P Z_ MT U No i 0F)E2
w ^ T\ R P ^\ R _ ‘ a) 9)<2 Q W_ W PMM R _ NSZ i 0F)E2 Q ‘ R Q UVP
L=/42 R w \e N M i 0F)E2 W\ Z P QM^ TUVP M q{acc _
NSZ U R\P _ P UVP i 0F)E2 T UVP W TW_ W P R UVPW P M =/40 ’$
Bc{u’&&f%’$D P

[P N P^Z_ i 0F)E2 Q UVP]SN **) n]$# !#** *<screenfontfile>* NSZ N ^Z_ \
Bq{accyL=/42D UVP]SN **) n]$#**

5 A r, R; 2 $ *

5 A e% Te %a ! s nU

zcm N _ oUVP W TW P ^ TUVP 2 F)E0 I T c{u’&&f% U ^Z_ &704 NSZ U ^Z_
i 0F)E2 PM S SZ 2 F)E0 I M ^ TUVP]SN BU zcmD **p$ #) n "t #& P** NSZ I*0 Z YM
zcm S L’>0 E)H9 B?icD UZPUVP]SN **p$ #**
$f

" & #t $) & n n ! ! * @ 5O k@ k@) QO $ OA5A Y M T UVP R M NSZ
i 0F)E2 R NSZ i 0F)E2 eT W_ _ k2J /(9 Q N N i 0F)E2 SUZPT W_ N _ oUVP W P

5 A ’ ^)$

^ T\ R P h /F9 Q \ T =/ IG/I2 h *06) 2 4 _ =)F/<2 P W P U R\ =qn?ı"""
R eN _ o \ T \ T =/ IG/I2 h *06) 2 4 \e -./0 U R WP[M N W T ^ T YM Q
m2 G Z YMUVP]SN m’X B ***#’** D N _ W TU ^Z_ &704 SW P V R NSZ
i 0F)E2 eT W_ _ k2J /(9 Q N N i 0F)E2 SUZPT W_ N _ oUVP W P

5 A + ‘%[^

\ QQ i 0F)E2 [P _ _ _ [P UVP i 0F)E2 NSZ m/0< Q [P _W\ P T SUZP N
2’ /0< U \R ‘ Z _ UVP i 0F)E2 ^ TN U \R [M i-p’& Z YM ia{ w UPVP Z NR &
w N _ o [T Q Z_ T Z T ‘ N W\ U Q Z_ TW P R MT W e _ UVP i 0F)E2 a) 9)<2
SW PT UVP W T F) 9)<2 Q PM UVP Z N M & 704 Z YMUVP j704 R NSZ @cnh
N _ oUVP -c{’85! w \e &704 Z YMMT U \ R rG)42E @60 4/7<2 RY eW P

SZ] a./6/F426 {24 U @0 2 UZPUN MW\ PU W y"(0 26F

```
character-set=TIS-620
```

Z YM SZ U _ [M {24G(^\ R _ @cnh eW P

5 k 1 R – 3J0:23/02

=8> ?3;/E p

U T UVP]SN [M =0 GX a) 9)<2 -))<9 Q

W_ PM UN NSZ ZPM oP MT U ZPM SZ W P^ T^\ R _
W_ PM UN "I, R _N \ [M W B V "(9: "/F "l /(D

5 k ; R;8F= FuGK 1 00,/K ; M B1: $ * M ? n $#! g #

NSZ E094607G40) PUV {J9z0 04 M QQ _ N] \ NSZ Q Y M w Q _ R _ W /
etc/sysconfig/i18n B V A2Et/4K m/ E6/l2D w N _ oR PW[W /etc/sysconfig/i18n
R \ T] ‘ Y MUZP RN b \e W T R T UVP R M W T P T MT

```
LANG="th_TH"                # Thai Locale
SYSFONTACM="tis620"         # System ACM
SYSFONT="tis-phaisarn.f16"  # System Font (Console)
...
...
```

R N _ oR PW[W /etc/sysconfig/keyboard Y M SZ l2J /(9
[M R\P _ Q UVPW P V MT

```
KEYTABLE="th-tis-38win.latin1"  # Thai TIS-820 2538
                                # (Latin1 Keysyms) Windows Keyboard
```

oP UVP F) 9)<2’4))<9 R V -./0 l2J9J 9 R P M QQ UVP 4.’409’d&H0 "40985! eW P R U
E094607G40) N _ oUVP]SN **ign) &"** SSZ W V

Z Q R PW[R P _Y M _ UZ_ B))4D eQ _ T UVP R M R qam NSZ RN b
R P UZPRN b_[PM_ \e W T R T l2J /(9 _ UVP R MT W e _ qam Q W_ S U ^Z_
G<40G926 BZ Q I244J R P qam Q W_ S R M QQ _]SN U T UVP qam Z YM R M
U W 9F60(4 [s <)I0 V .bash_profile NSZ E094607G40) N _ oUVP]SN **$ #$ $& #** U
T UVP R M R qam P W PW PD

cEx -./0’tu>-u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

@ ; DV8? H I F < v n m$

NSZ Z [PM PQ M T SZ] W TNSZ L’>0 E)H9 _ P ^\ R _ >0 E)H9 R
C2914)(Z YM >0 E)H9 m/ /I26 ` R P R M NSZ
SZ] W TR UVPR M W TU C094607G40) Z ` N _ o [PM_ _ _W PQ
Ww .44(xyyHHH"<0 GX2/9J":59"F) w Q _]SM TR \ \ M NSZ R C094607G40) P T

@ ; R B?6GRG–R / .> ;I

L >0 E)H9 N N UVPP R M Z TV ^ O UZ_ ` P N _ oUVP
R M \e -6G2 -J(2 WP P P T B M UVP m0F6)9):4 >0 E)H9D
R MT W e _ UVP W T eT SW PW_ Y M Q ^\ R _ ` L’>0 E)H9
T UVP Z N M W T V -c{’85! W_ W P

NSZ R M W TNSZ w N _ o ^Z W PQ
.44(xyy:4(" 2F42F")6"4.y(G7y-./0<0 GXy9):4H/62y4./0:) 49
1.44(xy y :4(" 2F42F")6"4.y (G7y -./0<0 GXy 9):4H/62y 4./0:) 493 *<16C*
< G F A 5 5?"# <=E" 9<1HF 3R C; . / P’) .–+L M+)% 8 >? X)M+Y)Z,+)% DHFC
3R " G2DG H <1HF 9> :SH S H G G2DG H <16 ? DE 5 " 1 BDH /D;SH ;1 P’) .–+L M)% 8

@ ; 3/ 9<2RG–/0B/ 8? R / .> ;I Tj #U V 0B /: ? f

NSZ U [P R PM _ W Z NM [M 409’85!’! M ^ T W Q UVPVY M iso-8859-11.enc
R w \ Q MT U W M yG96yL$$A8y<07yL$$y:) 49y2 F)E0 I9 oP W_ _ N _ o ^Z W PQ
.44(xyy<0 GX"4./0" 24y9:;/<(./y4./0’X:) 49y 1.44(xy y <0 GX"4./0" 24y 9:;/<(./y 4./0’X:) 493 *>?*
$j

‘aYLL G ?F b GH 5? X%c (%’X BT14D 1 FB <5 5 BT14"D2 DHFC
"= 696 d > H C G F A @ A B5C

_Y M_ P 2 F)E0 I P[P W\UZ_] Q _ G(E/42 W 2 F)E0 I"E06 N P T
^ T [P W\U W M yG96yL$$A8y<07yL$$y:) 49y2 F)E0 I9 R P UVP]SN l:) 4E06 ’2 y
G96yL$$A8y<07yL$$y:) 49y2 F)E0 I9 _Y M T PMTR P W 2 F)E0 I9"E06 Q o N P UZ_
Y MUVPU s W M [M R M W_ W P SZ :0<2 2 F)E0 I9"E06 W P P T

```
[sf_alpha@benja /]# cp /mnt/floppy/*.enc /usr/X11R6/lib/X11/fonts/encodings
[sf_alpha@benja /]# cd /usr/X11R6/lib/X11/fonts/encodings
[sf_alpha@benja encodings]# mkfontdir -e /usr/X11R6/lib/X11/fonts/encodings
```

NSZ Z N M NSZ R M L’>0 E)H9 Q _ d]YM 409’85!’!K 409’85!’$ R 409’85!’5
w 409’85!’! \e R M __ g -c{’85! \ NSZ 409’85!’$ \e M UVP] Y M
/F0 4)9. R 409’85!’5 UVPNSZ m0F6)9):4 >0 E)H9 Y MV TUZP >0 E)H9 w W_ W PMM R _
NSZ W TN _ oRN W TW P BN T _D NSZ W Z N M NSZ M PUVP 409’85!’$ R 409’
85!’5 N _ o ^Z W PQ Ww P V

NSZ R M V `_ P P

R /.> ;I V 0B d # n T)&wgn&w U UZP [P W\U ZPM e :) 4 R P UVP]SN **i& #n !**
<fontencodingir> Y MN P W :) 49"E06 R 2 F)E0 I9"E06 V

```
[sf_alpha@benja /]# cd /usr/share/X11/fonts/th/thai
[sf_alpha@benja thai]# mkfontdir -e /usr/X11R6/lib/X11/fonts/encodings
```

R /.> ;I V 0B ‘ $#$)! # UZP [P W\U ZPM e :) 4 R P UVP]SN **# $#** M
R P Q **i& #n !** *<fontencodingir>* Y MN P W :) 49"E06 R 2 F)E0 I9"E06 V

```
[sf_alpha@benja /]# cd /usr/share/X11/fonts/th/type1
[sf_alpha@benja type1]# type1inst
[sf_alpha@benja type1]# mkfontdir -e /usr/X11R6/lib/X11/fonts/encodings
```

R /.> ;I V 0B ! T jU oP PM UVPR M -6G2-J(2 QS \e PM
UZP [P W\U ZPM e :) 4 R P UVP]SN Y MN P 2 F)E0 I9"E06 NSZ **## i&n !** M
R P _ P T]SN **## i&n !** *-e /usr/X11R6/lib/X11/fonts/encodings/encodings.dir -o*
fonts.scale Y MN P T VY MR [[M \R M -6G2-J(2 R P Q UVP]SN l:) 4E06’
2 yG96yL$$A8y<07yL$$y:) 49y2 F)E0 I9 Y MN P W :) 49"E06 V

```
[sf_alpha@benja /]# cd /usr/share/X11/fonts/th/TrueType
[sf_alpha@benja TrueType]# ttmkfdir -e /usr/X11R6/lib/X11/fonts/encodings/encodings.dir \
                            -o fonts.scale
[sf_alpha@benja TrueType]# mkfontdir -e /usr/X11R6/lib/X11/fonts/encodings
```

NSZ **## i&n !** PM \e z2690) 5 [P W\ B QNM W P^ TUVP]SN **## i&n !** *--versions*D
w Z W PQ (/Fl/I2 :6224J(2 U UZ_ ` NSZ C094607G40) UVP 44 l:E06 $
Q W_ N _ oUVP)(40) ’2 W P

$&

oP M UVP]SN **## i&n !** R P U W :) 49"9F/<2 W_ _ Z N -c{’85! M QQ Q W
Z N M B"2 FD _ MT P \e W W_ N_ s BU Lp622&8 ` #"5"!D UZP ^Z W
"2 F _ UZ_ Q Ww P R P SW\W PR W _ M R P S _ [P M P
R M -6G2-J(2 UZ_ M] P

@ ’ ; ; M B1: R / .> ;I Tj #U M – 98DV8 v j # N !s ! TvjNU

NSZ UVP L p) 4 {26*26 U W /etc/X11/XF86Config-4 NSZ Lp622&8 #"X"X Z YM /
etc/X11/XF86Config NSZ Lp622&8 d"X"X Q **j #‘ # xc[%vpXkOOOx** BoP W_ _ UZP
SZ] R M Bp) 4D NSZ *B HDH VH* L p) 4 {26*26 BLp{DD oP _ UZPR PW[W /
etc/X11/fs/config R P _ W M [M R M UN W P _ [P W\Z **) # * " t**
B[P P T KD V BoP _ :) 4 R G 9F/<2 PM UN E062F4) 6J _ xG 9F/<2E M P T Y _W\ P TD

```
catalogue=/usr/share/X11/fonts/default/misc,
        ...,
        ...,
        /usr/share/X11/fonts/th/misc:unscaled,
        /usr/share/X11/fonts/th/misc,
        /usr/share/X11/fonts/th/TrueType,
        /usr/share/X11/fonts/th/type1
```

oP \e A2Et/4 Z YM m/ E6/l2 BR MY ` _ **) i& # #** D M QQ UVP **) i& # #** ***--add <FontDir>***
U _ R M **) i& # #** ***--remove <FontDir>*** U T UVP R M eW P

Q P UZP 6294/64 L p) 4 {26*26 UZ_ NSZ PUVP {J9z eUVP]SN **X #)X!) nX # nX &$*restart***
BU E094607G40) N _ oUVP **$!s)** ***xfs restart*** W PD

oP _ UVP p622-J(2 PM S SZ] R M NSZ p622-J(2 P T w Q MW\

@ + ; ; M B1: R / .> ;I Tj #U M – 9: F2:D8B8DV8 v j # N !s ! TvjNU

NSZ *B HDH VH* L p) 4 {26*26 BLp{D Z Q T_ \R M
T PMTR P N _ o M UVP p) 4 W P oP MT L’>0 E)H9 ^ T UVP]SN **$ # & y** ***<FontDir>***
R **$ # &** ***rehash*** ^ T *FontDir*]YMW M UN R M U M R BZ YMM QQ UVP **z mnz**
oP MT U W M _ R M PP D V

```
[sf_alpha@benja X11]# cd /usr/share/X11/fonts/th/TrueType
[sf_alpha@benja thaittf]# xset fp+ `pwd`
[sf_alpha@benja thaittf]# xset fp rehash
```

U SZ UZP L N _ o T UVP R M _ [P W\ _Y M _ S UZP _ p) 4@/4.
"<FontDir>" U W /etc/X11/XF86Config-4 NSZ Lp622&8 #"X"X Z YM /etc/X11/XF86Config
NSZ Lp622&8 d"X"X U *L&+)% ea)(LMe* V MT

$%

```
Section "Files"
...
FontPath  "..."
FontPath  "/usr/share/X11/fonts/th/TrueType"
FontPath  "/usr/share/X11/fonts/th/type1"
...
EndSection
```

oP _ UVP p622-J(2 PM S SZ] R M NSZ p622-J(2 P T w Q MW\

@ 5 ; ; M B1: R / .> ;I DM8; j! a n *

NSZ RM]V UVP p622-J(2 m)EG<2 [M L'>0 E)H9 U RN b R M
-6G2-J(2K @)94 {F60(4 -J(2$ R MY ` V kCh _Y M_ UVP q 40'q<0/90 I
w oP UVP PM SZ] R M UZP m)EG<2 P P T ^ TR PW[W /etc/X11/Xftconfig
R _ E06 *<fontdir>* V MT

```
dir "/usr/X11R6/lib/X11/fonts/Type1"
...
...
dir "/usr/share/fonts/th/TrueType"
dir "/usr/share/fonts/th/misc"
```

@ @ ; R B?6GD 7,R =8>27G M H I F <

UVP \R [PM_ NSZ W T B-./0 =)F/<2D U RN b NSZ L'>0 E)H9 U ^\ R _ YP g
Z_YM a) 9)<2]YM PM S \ R\ _ R P U Z [PM
RN b U \R [PM_ NSZ W T B-./0 =)F/<2D

@' ; =8>27G TR,8 J02JKU

@' vld Tv l g !n a U

Xl7 /(S] P T k2J /(9 _ R P R _] _N _ o k2J /(9 a) 9)<2
_ RT Z /([M ' R N _ o \ T W_ W P Xl7 /([M W T U L$$A8
_ _ O UVP l2J9J [M h I<09. R =/40 $ w e S W P L

Z Q P @/7<) {/6/4X/I/ *<pablo@mandrakesoft.com>* W PN P l2J9J 9
NSZ W T[P NSZ Lp622 #"!"$E R e SUZP ^\ R _ W_ N _ o _ W TW P
M Z Q _ UVP l2J9J NSZ Xl7 /(o d]YM -c{'85! R M 5 [P P R Z Q
Lp622 #"!"5 e_ UVP Lcm _ P T SUZPN _ o QNM _ W P

U UVP R\P _ L'>0 E)H9 Y MUZP _ W TW PUVP]SN **$ # ig** ***th*** Y M T W L'
k2J7)/6E m/([M W T _ UVP NSZ \ _ UVPU \ T]YM

Z*#' &# N &# NSZ M

5!

Z*#′b " # N &# NSZ W T

M2 <3M/E

NSZ C29l4)(q((<0F/40) Q _ Q R\P _ [M M V kCh
w UZP T M T [M R C29l4)(q((<0F/40) P]

oP PM UZPN _ o _ W TW P] P UVP L′>0 E)H9 UZPR PW[u(40) Xl7</J)G4 """
\e u(40) Xl7</J)G4 *"th"* U W /etc/X11/XF86Config-4 NSZ Lp622&8 #"X"X Z YM /
etc/X11/XF86Config NSZ Lp622&8 d"X"X U *L&+)% e O,+KLf)&Le* V MT

```
Section "InputDevice"
 ...
Option "XkbLayout" "th"
...
EndSection
```

U C29l4)(h *06) 2 4 V kCh M QQ _ Q T l2J7)/6E [M M
T M T UZP U SZ] [M C29l4)(h *06) 2 4 P ` P T BkCh U
SZ] W TU kChD

@’’ v%a Tv % # a # nU

NSZ SZ] [M Lcm P *VH>? G F9> DE C4@ A B5C* SW P^ T

\ R\ BhX()64D XMODIFIERS \e ´0 ı*<mode>* ^ T)E2]YM
] _]] [M QNM \ __ d R P

Passthrough x W_ _ QNM B>-- =2*2< !D

BasicCheck x QNM YPM P B>-- =2*2< $D

Strict x [P_ B>-- =2*2< 5D

V **!#** ***XMODIFIERS="@im=Strict"***

MT W e _ QNM ^ T Lcm SW P ^\ R _ R T W_ N_ s [PM_ _ _ T
c (G4 m24.)E [M L′>0 E)H9 M W P Lp622&8 -./0 {G(()649 x c (G4
.44(xyyHHH"<0 l9" 2F42F")6"4.y 4.2(y4.′XH0 E)Hy0 E2X".4 ^c (G4
1.44(xy y HHH"<0 l9" 2F42F")6"4.y 4.2(y 4.′XH0 E)Hy 0 E2X".4 ^c (G43

@+ r, R; 2 v n m$

M2 <3M/E

5$

Y MUZP UVP N_ s PM SZ UZPUVP \R [PM_ NSZ W T B-./0 =)F/<2D R P
B T M T U RN b U \R [PM_ NSZ W TD

@+ #!y# Tv%#!# * ! *U

U UVP^\ R _ M _ B426 0 /<D X0426 ~4./0 Z YM 4X0426 N _ o T UVPW PQ]SN **#!** Z YM
##! U \ T P Z_YM W PU Lk R N _ oUVP **#!*'N)** U \ T W P
BR Lcm Q W_ S D

_ M `R T UVP^\ R _4X0426 Q]SN Ba) / E=0 2D
xiterm 1'49(/F2 <n>3 1'417 <kbmode>3 1'40 <immode>3

u(40) `NSZ 4X0426

'49(/F2 <n> x QS 9(/F2 NSZ V VTN } <n> ı QS 9(/F2
'417 <kbmode> x \R R\P _ Bk2J7)/6E=/J)G4D <kbmode> ı *tis|ked*

409'R -c{'&5!5fd&
l2E'R _s B-c{'&5!5fd8D

'40 <immode> x QNM _ } <immode> ı *PassThrough|BasicCheck|Strict*

@/99-.6)GI.'W_ _ QNM
/90Fa.2Fl' QNM YPM P
{460F4' [P_

SZ] [M LA29)G6F29[M X0426

R PW[W ~/.Xresources Z YM ~/.Xdefaults RP P _Z YMR PW[MW\ P
4./0;9(/F2x <n> 4./0;l2J7)/6Ex <kbmode> 4./0;0 x <immode> FG69)6a)<)6x <color>
FG69)6a)<)6-./0x <color>

NSZ <cursorColor>]YM N [M aG69)6 _Y MUVP M R <cursorColorThai>]YM N [M
aG69)6 _Y MUVP W T 4./0;9(/F2 4./0;l2J7)/6E R 4./0;0 UZP u(40) [M 4X0426 U '49(/F2'417
R '40 _ S B P D

NSZ [PM_ _ _ U **#!** / (/I29"""

@+' r, R; 2 [#$) RG– a W **

NSZ n249F/(2 R m),0<</] UVP n249F/(2 8"$ Z YM m),0<</ !"%"5 [P W\
55

Y MNSZ UVP W T U SZ] W T QS \e NSZ n249F/(2 R m),0<</ UZP [P W\
_ hE04’¯@62:262 F29 Q P SZ] U N ‘ U Ro \R P W_P P wP T P
BZ YM _ PM D

q((2/6/ F29

p) 49
U \ _ YM p) 49 p)6 YM -./0 Q P YM M ‘ _ PM U V M 9260:K
9/ 9’9260:K FG690*2K :/ 4/9JK))9(/F2 w \e \R M _ g

NSZ @6)()640) /< p) 4 BM QW_ _ U *2690) D UVPU SZ
\R M _ g Q UVPU M N W_ SZ R M _ g Q UVP UZP
N T M T MY ‘ P t2<(]

n/*0I/4)6

=/ IG/I29
U \ _ YM C2:/G<4 a./6/F426 F)E0 I UZP U V M a./6/F426 F)E0 I YM -c{’85! Y MUZP
n/*0I/4)6 RN M N ^ TUVP \R M NSZ -c{’85! R Z N M -c{’85!
\e] \ T ToP M N P W_ Z N M UVP

m/0<˘n2H9I6)G(9

m299/I2 C09(</J
U \ _ YM a./6/F426 F)E0 I UZP U V M =/ IG/I2 YM -c{’85! Y MUZP m/0<9 ˘
n2H9I6)G(9 A2/E26 RN Q Z_ T ^ TUVP \R M NSZ -c{’85! R UVP Z N M
-c{’85! \e] \ T T Z Q Z_ T P W_ Z N M UVP

m299/I2 a) ()9040)
U \ _ YM a./6/F426 F)E0 I UZP U V M a) ()92 m299/I29 YM -c{’85! Y MUZP m/0<9 ˘
n2H9I6)G(9 A2/E26 N Q Z_ T ^ TUVP Z N M -c{’85!

\ T Z N M [s M Ww [Z YM Q Z_ T N _ o \ T W PQ UZPW\ _ z02H ’¯
a./6/F426 F)E0 I R YM Z N M PM NSZ]SR S _Y MM M N Z YMQ Z_ TW W_ MM
W P \ T Z N M _Y MM [PM] _W_ MM NSZ 6)H926 R m/0< ˘ n2H9 a<02 4
U [T Q Z_ TZ YMN [[N _ o \ T Z N M W PQ _ T P V N
T M T MY ‘ ^\ U t2<([M ^\ R _]

@++ T v^n#!U

] sQ PM P =˙L UZPUVPM W T M NSZ P R =˙L $"$"8] sN _ o SW P^ T [P W\ hE04 ’¯
@62:262 F29 ’¯=))l˘p22< 4/7 ’¯{F622 p) 49 4/7 R YM R M W T NSZ A) / {/ 9
{260: R -J(2H60426 R UVPR M P_ Z N M Bh F)E0 ID \e -c{’85!

NSZ SZ] [M =JX U UVPR\P _ UZPW\ hE04 ’ ¯ @62:262 F29 ’ ¯ =))l ˘ p22< 4/7 ’ ¯
{F622 p) 49 4/7 R YM k2J7)/6E m/(R SZ l2J /(NSZ **$# i** UZP \e *null* R
’n i UZP \e *thai-kedmanee* Q P UZPR PW *~/.lyx/preference* R P _ ¨70 E a’
7/Fl9</9. l2J /(’4)II<2 [P W\ Y M SZ UZPUVP **#!*’{**U \ T

NSZ [PM_ _ _ T UVP WY =JL W PQ =JL’-./0’m0F6)tu>-u B-./0D
1.44(xy y 4./0"/ G"2EG"/Gy <0 GXy E)FG 2 4y 4.;=JL’-./0’ 0F6)tu>-uy 3 ^ T] s V \M
<chanop@debian.org> R =JL UZ_ ‘ .44(xyyEJ /X"/ G"2EG"/Gy

@ 5 I ($i# ^ s ! # Tl(^U RG–r, R; 2 M I(^

@ 5 :.F, Tl(^ #! * # !U

SZ] W TNSZ kCh ^ T P W\ w PM S \e M R _ [P M P

W\ *\LYM% ’()*’+)% g Q%, +Yh i $’ _,’_L*

YM Ro =)F/<2 Q P UZP \ T a)G 46J \e -./0</ E BMT U q90/ ˘ uF2/ 0/D

YM =/ IG/I2 \e C2:/G<4 BaD M B PM SZ \R M M o Q _ SZ W P
M QQ SUZPM W_ MM D

YM a./6924 \e -c{’85! Q P q((<J

W\ *$%%N i aLL(g a% +M*

YM R M _UQVM R P F./6924 [M R M \e -c{’85!

oP Q UVP q 40’q<0/90 I :)6 p) 4 / E cF) 9 B MTZT D PM SZ] T
R M UPZP L:4 M B/etc/X11/XftconfigD T M T N _ o W PQ
RN b R R M

q((<J] UZP T PMT oP P kE2’c$& ’-./0 W P P T UZP W\\ T =/ IG/I2 \e -./0
U =)F/<2 -/7 [M *\LYM% ’()*’+)% g Q%, +Yh i $’ _,’_L*

W\ *jLhZ%’YX* BD

<)F/<2 l2J /(

W\ *$%%N i aLL(g jLh k) X) _M* B s \ R PN ’ ¯ R\P _ D

UZP YM Rb b P W_P P wP TZ [PM l2J /(4)II<2 Q P SZ \ _NSZ \ T
^ T YM SZ M] ° \ _ P [R P \ _] T M PM B V I6/*2 /FF2 4D
Z YM YM] \ T T B **#!*’Z*#’l**D

@ 5 ’ r, R; 2 I | ! !

SZ] W TNSZ k) ~G26)6 >27 6)H926 UZP [P W\ **I(^ #! * # !** U *ILZ*
kY%cML+ g j% m,LY%Y Z YM [P ^\ R _k) ~G26)6R P YM m2 G *L++)_ g Q% n)_,YL j% m,LY%Y*

W\ *a% +M*

YM a./6924 [M M \e -c{’85!

Q P YM R M _UQVM NSZ R M _ g `

P C2:/G<4 h F)E0 I \e -c{’85! P T Q P uk

oP RN b Ww W TM W_ MM UZPM]SR SQ
\ T Z N M _Y MM [PM] _W_ MM NSZ 6)H926 R m/0< ˇ n2H9 a<02 4]

@ 5 + r, R; 2>S: f M I(^

SZ] W TNSZ ^\ R _kE2 MY ‘ Q] P T ‘ UZP [P W\ m2 G *L++)_ g Q% n)_,YL*
R P M Z _ N U [M ^\ R _UZP SZ Z YM _ B=/ IG/I2D Z N M Ba./6924D
Z YM] \ T T[M Z N M BC2:/G<4 h F)E0 ID oP _ UZP YM W T B-./0D R a./6924 \e
-c{’85!

@@ n m a "!/:? f

@@ N m& $ m n m "!

MT U Z Q S]

@@’ n ma i !

MT U Z Q S]

**@ A \[RG–r, R; 2 M **

NSZ ?) 2 P [PM_ Q R\P _ SZ W PQ Ll7 /(\ B P D
N RN b MY ‘ PM SZ Q a) 46)<a2 426

@ A :.F, T\[#! * # !U

MT U Z Q S]

@ A ’ Zg m !n

q70H)6E \e >)6E @6)F299)6 NSZ ?) 2 w q70H)6E _] _N _ oN R T
N _ o \ W U \R ‘W P _ P m0F6)9):4 >)6E j"! w UVP P W\ m0F6)9):4 u::0F2 NSZ
q70H)6E T _ Q R M [M M w SUZP W_ QS \e PM M T SZ W T
?) 2 Bw T W_ N N 0$& WZ D R q70H)6E U UZ_ ‘N _ oUVP L p) 4 {26*26
W P V NSZ q70H)6E UVP W TW PU *2690) !"%"# [P W\]

P R M q70H)6E SW P P BoP UVP L’p) 4 {26*26 R SZ] p622-J(2 /
Betc/X11/XftconfigD R P W_ QS \e PM P _D

Z W M [M q709G042 B q c{ic-h;tumhD ^ TUVP]SN **"!** *"ABUSUITE_HOME" ‘which abiword‘*

] ZPM q c{ic-h;tumhy:) 49y-c{85! ZPM e R M -6G2-J(2 [M L’>0 E)H9
UVP]SN q c{ic-;tumhy70 y44:/E 0 "9.¸(HE¸-c{’85!

_Y M T_R M R P UZP /(H)6l/6)G E UZ_ ^ T [P W\ -))<9¯@62:262 F29 R P] ° uk

Q P PM S R PW y"q70{G042yq70>)6E"@6):0<2 R P _ /44607G42 A2 /(?<J(.9m/9426{H04F.ı !
U *&,M+%* 9F.2 2 Y MR P\ Z /(NSZ MT U R

@ k 1 R – 3J0:23/02

@ k ; 3,G9:< M / .> ;I 32S:>>: =8>1. 2F2:>>; M d! m$! RG– a * } [m$ * #

:H " 2D" > 9D C D<1HF B UZP S \ T Z N M ^ T

Y8 3,4 > ;I G–/0B UZP M Z _ NSZ SZ a)E0 I oP \e m),0<</ Q MT U z02H ’¯ a./6/F426
a)E0 I N k) ~G26)6 MT U z02H ’¯ a./6924 h F)E0 I R YM \e -./0 B-c{’85!D
Y M \ T UVP Z N M W T M N M QQ UVP Z N \e =/40 ’$Bc{u’&&f%’$D

Y8 3,0BRG8.3,4 > ;I H I F < RG–29G ;I~–3/42F,B8.< – 3 T3>U :.3>; UZP \ T a./6/F426 F)E0 I
\e i 0F)E2 Bi-p’&D

^\ R _ m),0<</ U Q _ _ z02H ’¯ a./6/F426 F)E0 I ’¯ aG94) 0,2 """ NSZ
S Z N M UVP MT ‘_ W PU z02H ’¯ a./6/F426 F)E0 I W P e] Q _ Z NM -./0 B-c{’85!D
R i 0F)E2 Bi-p’&D W P Y M] _N U N Z N M P T

cEx -./0’tu>-u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

A ; J r, R; 2 9: E H I F <

A 2 / L /: ? f RG–; DV8? H I F <

MT U Z Q S]

A ’) * \[c g! !

MT U Z Q S]

A + g

MT U Z Q S]

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

k =8>27G>S: f

k ; DV8? H I F < M v

UVP =/–2L NSZ W T _ [P M ‘ ^ TN [\ P

k ; DV8H I F <D 3>; v

U N Z [M M N UZP _ ¨G92(/Fl/I214./03 7/72<˝ [P W\ P T

MT [M M N –2–2L

```
\documentclass[a4paper]{article}
\usepackage[thai]{babel}

\begin{document}
##########
\end{document}
```

k ’ ; / B1 H I F < ;:> 3>; F,DV8?

_Y MQ S M N W\UVP PM]S M ^ TUVP^\ R _ 9H/4. ^ TUVP]SN **$m #** < *filename.tex* > *filename.ttex*

k + ; 3>; # F,DV8? T * 3>; M 7,R /: ? fU

U F) (0<2 M N =/42X \e E*0 UVP]SN ***#** *tilename.ttex*

_Y M PM RN QM UZPUVP^\ R _ XE*0 ^ T]SN **ns** *filename.dvi*

5j

NSZ R\ M N Q "E*0 \e @)649F60(4 UVP^\ R _E*0(9 ^ TUVP]SN **ns $** *-o filename.ps filename.dvi*

R\ W \e "(E: UZP]SN **n&* #** *filename.ttex*

k ’ !i "\!

MT U Z Q S]

k + G0?1K3;9:<.; =>?F <

MT U Z Q S]

k 5 G0?1K>S: f 9:3;9:<.=8>?

MT U Z Q S]

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

P Y 2 /> TjZ U

MT U Z Q S]

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

~ E; 2

MT U Z Q S]

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(

cEx –./0’tu>–u"X <K* $"f 5!!5y!dy!f $dxf8xf5 9:;/<(./ hX(