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;File: fig0648.pep Computer Systems, Fifth edition Figure 6.48

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Object

Addr code Symbol Mnemon Operand Comment

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;File: fig0648.pep

;Computer Systems, Fifth edition

;Figure 6.48

;

0000 120003 BR main

data: .EQUATE 0 ;struct field #2d

next: .EQUATE 2 ;struct field #2h

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;\*\*\*\*\*\*\* main ()

first: .EQUATE 8 ;local variable #2h

p: .EQUATE 6 ;local variable #2h

first2: .EQUATE 4 ;local variable #2h

p2: .EQUATE 2 ;local variable #2h

value: .EQUATE 0 ;local variable #2d

0003 58000A main: SUBSP 10,i ;push #first #p #first2 #p2 #value

0006 C00000 LDWA 0,i ;first = 0

0009 E30008 STWA first,s

000C 330000 DECI value,s ;scanf("%d", &value);

000F C30000 while: LDWA value,s ;while (value != -9999)

0012 A0D8F1 CPWA -9999,i

0015 18003F BREQ endWh

0018 C30008 LDWA first,s ;p = first

001B E30006 STWA p,s

001E C00004 LDWA 4,i ;first = (struct node \*) malloc(sizeof(struct node))

0021 2400E2 CALL malloc ;allocate #data #next

0024 EB0008 STWX first,s

0027 C30000 LDWA value,s ;first->data = value

002A C80000 LDWX data,i

002D E70008 STWA first,sfx

0030 C30006 LDWA p,s ;first->next = p

0033 C80002 LDWX next,i

0036 E70008 STWA first,sfx

0039 330000 DECI value,s ;scanf("%d", &value)

003C 12000F BR while

003F C30008 endWh: LDWA first,s ;for (p = first

0042 E30006 STWA p,s

0045 C30006 for: LDWA p,s ;p != 0

0048 A00000 CPWA 0,i

004B 180066 BREQ endFor

004E C80000 LDWX data,i ;printf("%d ", p->data)

0051 3F0006 DECO p,sfx

0054 D00020 LDBA ' ',i

0057 F1FC16 STBA charOut,d

005A C80002 LDWX next,i ;p = p->next)

005D C70006 LDWA p,sfx

0060 E30006 STWA p,s

0063 120045 BR for

0066 C00000 endFor: LDWA 0,i ;first2 = 0

0069 E30004 STWA first2,s

006C C00000 LDWA 0,i ;p2 = 0

006F E30002 STWA p2,s

0072 C30008 LDWA first,s ;for (p = first

0075 E30006 STWA p,s

0078 C30006 for2: LDWA p,s ;p != 0

007B A00000 CPWA 0,i

007E 1800B1 BREQ endFor2

0081 C30004 LDWA first2,s ;p2 = first2

0084 E30002 STWA p2,s

0087 C00004 LDWA 4,i ;first2 = (struct node \*) malloc(sizeof(struct node))

008A 2400E2 CALL malloc ;allocate #data #next

008D EB0004 STWX first2,s

0090 C80000 LDWX data,i ;first2->data = p->data;

0093 C70006 LDWA p,sfx

0096 C80000 LDWX data,i

0099 E70004 STWA first2,sfx

009C C30002 LDWA p2,s ;first2->next = p2

009F C80002 LDWX next,i

00A2 E70004 STWA first2,sfx

00A5 C80002 LDWX next,i ;p = p->next)

00A8 C70006 LDWA p,sfx

00AB E30006 STWA p,s

00AE 120078 BR for2

00B1 C30004 endFor2: LDWA first2,s ;for (p2 = first2

00B4 E30002 STWA p2,s

00B7 C30002 for3: LDWA p2,s ;p2 != 0

00BA A00000 CPWA 0,i

00BD 1800D8 BREQ endFor3

00C0 C80000 LDWX data,i ;printf("%d ", p2->data)

00C3 3F0002 DECO p2,sfx

00C6 D00020 LDBA ' ',i

00C9 F1FC16 STBA charOut,d

00CC C80002 LDWX next,i ;p2 = p2->next)

00CF C70002 LDWA p2,sfx

00D2 E30002 STWA p2,s

00D5 1200B7 BR for3

00D8 D0000A endFor3: LDBA '\n',i ;printf("\n")

00DB F1FC16 STBA charOut,d

00DE 50000A ADDSP 10,i ;pop #value #p2 #first2 #p #first

00E1 00 STOP

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;\*\*\*\*\*\*\* malloc()

; Precondition: A contains number of bytes

; Postcondition: X contains pointer to bytes

00E2 C900EC malloc: LDWX hpPtr,d ;returned pointer

00E5 6100EC ADDA hpPtr,d ;allocate from heap

00E8 E100EC STWA hpPtr,d ;update hpPtr

00EB 01 RET

00EC 00EE hpPtr: .ADDRSS heap ;address of next free byte

00EE 00 heap: .BLOCK 1 ;first byte in the heap

00EF .END

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Symbol table

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Symbol Value Symbol Value

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data 0000 endFor 0066

endFor2 00B1 endFor3 00D8

endWh 003F first 0008

first2 0004 for 0045

for2 0078 for3 00B7

heap 00EE hpPtr 00EC

main 0003 malloc 00E2

next 0002 p 0006

p2 0002 value 0000

while 000F

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