# Exercise 6 Answers



35FD

35FE

35FF

3600

XX

XX

XX

XX

After 4:

3600

SP

XX

XX

AA

XX

After 5:

35FF

XX

BB

AA

XX

After 6:

35FE

DD

BB

AA

XX

After 7:

35FC

DD

BB

AA

XX

After 8:

35FD

XX

XX

AA

XX

After 9:

35FF

XX

XX

XX

XX

After 10:

3600

a:

XX

XX

XX

CC

XX

XX

XX

35FC

A:$AA B:$CC X:$DDBB

35FD

35FE

35FF

3600

XX

XX

XX

XX

After 1:

3600

SP

XX

C0

0A

XX

After 4:

35FE

AA

C0

0A

XX

After 9:

35FD

AA

C0

0A

XX

After 10:

35FB

AA

C0

0A

XX

After 6:

35FA

AA

C0

0A

XX

After 7:

35FB

AA

C0

0A

XX

After 8:

35FD

b:

XX

XX

XX

12

12

12

XX

35FC

35FB

XX

XX

XX

C0

C0

C0

XX

XX

XX

XX

XX

BB

XX

XX

35FA

XX

C0

0A

XX

After 11:

35FE

XX

XX

XX

XX

After 12:

3600

XX

XX

XX

XX

XX

XX

35FD

35FE

35FF

3600

35FC

35FB

35FA

SP

A:$AA B:$BB

35FD

35FE

35FF

3600

XX

XX

XX

XX

After 1:

3600

SP

XX

C0

0A

XX

After 4:

35FE

04

C0

0A

XX

After 8:

35FD

04

C0

0A

XX

After 9:

35FC

04

C0

0A

XX

After 11:

35FA

04

C0

0A

XX

After 8:

35F9

04

C0

0A

XX

After 9:

35F8

c:

XX

XX

XX

03

03

03

03

35FC

35FB

XX

XX

XX

XX

14

14

14

XX

XX

XX

XX

C0

C0

C0

35FA

35F9

XX

XX

XX

XX

XX

04

04

XX

XX

XX

XX

XX

XX

02

35F8

35FD

35FE

35FF

3600

04

C0

0A

XX

After 11:

35F6

SP

04

C0

0A

XX

After 8:

35F5

04

C0

0A

XX

After 9:

35F4

04

C0

0A

XX

After 11:

35F2

04

C0

0A

XX

After 15:

35F4

04

C0

0A

XX

After 12:

35F5

04

C0

0A

XX

After 14:

35F6

03

03

03

03

03

03

03

35FC

35FB

14

14

14

14

14

14

14

C0

C0

C0

C0

C0

C0

C0

35FA

35F9

04

04

04

04

04

04

04

02

02

02

02

02

02

02

35F8

35F7

14

14

14

14

14

14

14

C0

C0

C0

C0

C0

C0

C0

35F6

35F5

XX

04

04

04

04

04

XX

XX

XX

01

01

01

XX

XX

35F4

35F3

XX

XX

XX

14

XX

XX

XX

XX

XX

XX

C0

XX

XX

XX

35F2

35FD

35FE

35FF

3600

04

C0

0A

XX

After 15:

35F8

SP

04

C0

0A

XX

After 12:

35F9

04

C0

0A

XX

After 14:

35FAA

04

C0

0A

XX

After 15:

35FC

04

C0

0A

XX

After 12:

35FD

XX

C0

0A

XX

After 14:

35FE

XX

XX

XX

XX

After 15:

3600

03

03

03

03

XX

XX

XX

35FC

35FB

14

14

14

XX

XX

XX

XX

C0

C0

C0

XX

XX

XX

XX

35FA

35F9

04

04

XX

XX

XX

XX

XX

02

XX

XX

XX

XX

XX

XX

35F8

A:$06 B:$04

Assumption:

ORG $1000

Num1 DS.W 1

RAH

RAL

Stack Frame

Num2 DS.W 1

Result DS.W 1

1. …

LDD Num1

LDX Num2

JSR AddTwo

STD Result

…

AddTwo PSHX ; Since there is no way to add X directly to D

ADDD 0,SP ; push Num2 on the stack and add with indexed

LEAS 2,SP ; remove Num2 from stack (not restoring X)

RTS

RAH

RAL

Stack Frame

1. …

LDX #Num1

LDY #Num2

JSR AddTwo

STD Result

…

AddTwo LDD 0,X

ADDD 0,Y

RTS

1. …

RAH

RAL

Stack Frame

Num2HH

Num2L

YH

YL

XH

XL

PSHX

PSHY

LDD Num2

PSHD

LDD Num1

JSR AddTwo

STD Result

LEAS 2,SP

PULY

PULX

…

AddTwo ADDD 2,SP

RTS

1. …

PSHX ; save registers

PSHY

PSHD

LEAS -2,SP ; allocate stack space for Result

LDD #Num2 ; push inputs last to first

PSHD

LDD #Num1

PSHD

JSR AddTwo

LEAS 4,SP ; remove passed inputs

PULD ; pull the result

STD Result

PULD ; restore registers

PULY

Num1H

Num1L

Stack Frame

Num2HH

Num2L

ReturnH

ReturnL

DH

DL

YH

YL

XH

XL

RAH

RAL

PULX

…

AddTwo LDX 2,SP ; get address of first input

LDD 0,X

LDX 4,SP ; get address of second input

ADDD 0,X

STD 6,X ; store answer to allocated space

RTS

1. …

LEAS -2,SP ; allocate stack space for Result

LDY #Num2 ; push inputs last to first

Num1H

Num1L

Stack Frame

Num2HH

Num2L

ReturnH

ReturnL

RAH

RAL

DH

DL

XH

XL

PSHY

LDY #Num1

PSHY

JSR AddTwo

LEAS 4,SP ; remove passed inputs

PULY ; pull the result

STY Result

…

AddTwo PSHX ; save registers

PSHD

LDX 6,SP ; get address of first input

LDD 0,X

LDX 8,SP ; get address of second input

ADDD 0,X

STD 10,X ; store answer to stack space

PULD ; restore registers

PULX

RTS