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**190905522 CSE D Roll 62**

**ES Lab 4 (Week 4) – Branching and Looping**

**Q1) Convert a 32-bit packed BCD number into its equivalent hexadecimal number.**

**CODE:**

AREA RESET, DATA, READONLY

EXPORT \_\_Vectors

\_\_Vectors

DCD 0X10001000

DCD Reset\_Handler

AREA MYCODE, CODE, READONLY

ENTRY

EXPORT Reset\_Handler

Reset\_Handler

LDR R0,=SRC1

LDR R1,[R0]

LDR R7,=DST

MOV R2,#1

MOV R3,#0xA

MOV R4,#0

MOV R5,#0xF

UP AND R6,R1,R5

MLA R4,R6,R2,R4

MUL R2,R3

LSR R1,#4

CMP R1,#0

BNE UP

STR R4,[R7]

STOP B STOP

SRC1 DCD 0x612

AREA MYDATA, DATA, READWRITE

DST DCD 0

END

**OUTPUT:**

Graphical user interface, text, application, email

Description automatically generated

**Q2) Convert a 16-bit hex number into its equivalent packed BCD.**

**CODE:**

AREA RESET, CODE, READONLY

EXPORT \_\_Vectors

\_\_Vectors

DCD 0x10001000

DCD Reset\_Handler

AREA myCode, CODE, READONLY

ENTRY

EXPORT Reset\_Handler

Reset\_Handler

LDR R5,=SRC

LDR R0,[R5]

LDR R6,=DST

MOV R1, #0

MOV R2, #0

MOV R3, #0

UP CMP R0, #10

BCC STO

SUB R0, #10

ADD R1, #1

B UP

STO LSL R0, R2

ADD R2, #4

ORR R3, R0

MOV R0, R1

MOV R1, #0

CMP R0, #0

BHI UP

STR R3,[R6]

STOP B STOP

SRC DCD 0xABCD

AREA MYDATA, DATA, READWRITE

DST DCD 0x0

END

**OUTPUT:**

Graphical user interface, text, application

Description automatically generated

**Q3) Add two 32-bit packed BCD numbers and store the result in packed BCD form.**

**CODE:**

AREA RESET, CODE, READONLY

EXPORT \_\_Vectors

\_\_Vectors

DCD 0x10001000

DCD Reset\_Handler

AREA myCode, CODE, READONLY

ENTRY

EXPORT Reset\_Handler

Reset\_Handler

LDR R0, =SRC1

LDR R1, =SRC2

LDR R2, =DST

LDR R3, [R0]

LDR R4, [R1]

MOV R5, #0x0000000F

MOV R6, #0

MOV R7, #0

UP BL ADDN

ADD R12, R3, R4

CMP R12, #0

BNE UP

CMP R6, #0

BEQ GO

LSL R6, R10

ADD R11, R6

GO STR R11, [R2]

STOP B STOP

ADDN AND R8, R3, R5

AND R9, R4, R5

ADD R7, R8, R9

ADD R7, R6

CMP R7, #10

BCC STO

SUB R7, #10

MOV R6, #1

STO LSL R7, R10

ADD R11, R7

ADD R10, #4

MOV R7, #0

LSR R3, #4

LSR R4, #4

BX LR

SRC1 DCD 0x11111111

SRC2 DCD 0x22222222

AREA MYDATA, DATA, READWRITE

DST DCD 0x0

END

**OUTPUT:**

Graphical user interface, text, application, email

Description automatically generated

**Q4) Multiply two 16-bit packed BCD and store the result in packed BCD form.**

**CODE:**

AREA RESET, CODE, READONLY

EXPORT \_\_Vectors

\_\_Vectors

DCD 0x10001000

DCD Reset\_Handler

AREA myCode, CODE, READONLY

ENTRY

EXPORT Reset\_Handler

Reset\_Handler

LDR R0, =SRC1

LDR R1, =SRC2

LDR R2, =DST

LDR R3, [R0]

MOV R6, #0xF

MOV R7, #1

MOV R9, #10

BL CON

MOV R5, R4

LDR R3, [R1]

MOV R7, #1

MOV R4, #0

MOV R8, #0

BL CON

MUL R4, R4, R5

MOV R0, #0

MOV R1, #0

MOV R7, #0

BL NOC

STR R1, [R2]

STOP B STOP

CON AND R8, R3, R6

MUL R8, R7

ADD R4, R8

MUL R7, R9

LSR R3, #4

CMP R3, #0

BHI CON

BX LR

NOC CMP R4, #10

BCC STO

SUB R4, #10

ADD R0, #1

B NOC

STO LSL R4, R7

ADD R1, R4

ADD R7, #4

MOV R4, R0

MOV R0, #0

CMP R4, #0

BHI NOC

BX LR

SRC1 DCD 0x1234

SRC2 DCD 0x2222

AREA MYDATA, DATA, READWRITE

DST DCD 0x0

END

**OUTPUT:**

Graphical user interface, text, application

Description automatically generated

**THE END**