Homework 1 - BMG

1725346 - Hasan TEZCAN

1) a) 01001010

0 | 100 | 1010

↓ ↓

⊕ 0

$0,1010 \quad \frac{1}{2}+\frac{1}{8}=\frac{5}{8}$ //

b) 01101101

0 | 110 | 1101

↓ ↓

⊕ +2

$11,01 \quad 2+1+\frac{1}{4}=\frac{13}{4}$ //

c) 00111001

0 | 011 | 1001

↓ $2^1 2^0$

⊕ $3+(-4)=-1$ (1 deta sola kayacak)

$0,01001 \quad \frac{1}{4}+\frac{1}{32}=\frac{9}{32}$ //

d) 11011100

1 | 101 | 1100

↓ 2^0 ↓

⊖ +1

$-1,100 \quad -\left(1+\frac{1}{2}\right)=-\frac{3}{2}$ //

e) 10101011

1 | 010 | 1011

↓ $2^1 2^0$

⊖ $2+(-4)=-2$

(2 deta sola kaydıcak)

$0,001011 \quad -\left(\frac{1}{8}+\frac{1}{32}+\frac{1}{64}\right)=\frac{-11}{64}$ //

2)

a) $1+\frac{2}{4}$

1,1

0 | 101 | 1100

b) $5+\frac{3}{4}\ \left(\frac{1}{4}+\frac{1}{2}\right)$

101,11

0 | 111 | 1011

c) $5/4 \quad \left(\frac{1}{4}+1\right)$

1,01

0 | 101 | 1010

d) $-2-\frac{1}{2}$

⊖ 10,1

1 | 110 | 1010

e) $-(7+3/8)$

⊖ 111,011

1 | 111 | 1110

3) A) 01001001

0 100 1001

↓

⊕

01001 $\frac{1}{2}+\frac{1}{16}=\frac{18}{32}$

$\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}\ \frac{1}{16}$

B) 00111101

0 011 1101

↓ ↓

⊕ 3+(-4)=-1

0,01101 $\frac{1}{4}+\frac{1}{8}+\frac{1}{32}=\frac{13}{32}$

$\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}\ \frac{1}{16}\ \frac{1}{32}$ (1) (4)

A > B

$\frac{18}{32}$ $\frac{13}{32}$

pseudocode:

→ A ve B sayılarını decimale çevir.

→ IF (A > B)

"A" büyüktür "B" yazdır

→ ELSE (B > A)

"B" büyüktür "A" yazdır

→ bitir.

4) a) 001111 100100 001100

B E D

b) 010001 000000 001011

C A B

c) 011010 110110 100000 011100

H E A D

5) Computer ␣ Science !

6) a) 00101
+ 01000
01101

taşma yok

b) 11111
+ 00001 ①
100000

taşma yok

Zaten (-) old. için başındaki biri yok sayarız.

c) 01111
+00001 ①
10000

taşma var

(+) ile (+) nın toplamı (-) olmaz //

d) 10111
+ 11010 ①
110001

taşma yok

e) 11111 ①
+ 11111
111110

taşma yok

f) 00111
+01100 ①
10011

taşma var

(+) ile (+) nın toplamı (-) olmaz

7)

a) 011111
$2^4 2^3 2^2 2^1 2^0$

16+8+4+2+1 = 31

31+(-32) = -1 //

b) 100110
$2^5 2^4 2^3 2^2 2^1 2^0$

4+2 = 6 //

c) 111000
$2^5 2^4 2^3 2^2 2^1 2^0$

16+8 = 24 //

d) 000101
$2^2 2^1 2^0$

2+1=3

3+(-32) = -27 //

e) 010101
$2^4 2^3 2^2 2^1 2^0$

16+4+1 = 21

21+(-32) = -11 //

8) Adres içerik

→ 30 → 20
31 → 03
→ 32 → 21
33 → 01
→ 34 → 22
35 → 00
→ 36 → 23
37 → 10
→ 38 → 14
39 → 00 (01 değerli) (02 değerli)
→ 3A → 34
3B → 10 (11 değerli) (12 değerli)
→ 3C → 52
3D → 21
→ 3E → 53
3F → 31
→ 40 → 32
41 → 39
→ 42 → 33
43 → 3B
→ 44 → B2
45 → 48
→ 46 → B0
47 → 38
48 → 00
49 → 00

Fetch PC=30

(1) IR=2003 PC=32
R0=03

(2) IR=2101 PC=34
R1=01

(3) IR=2200 PC=36
R2=00

(4) IR=2310 PC=38
R3=10

(5) IR=1400 PC=3A
R0=03 yükledim R4=03

(6) IR=3410 PC=3C
Bellek[10]=03

(7) IR=5221 PC=3E
R2=R1+R2
01+00 // R2=01

(8) IR=5331 PC=40
R3=R3+R1
10+01 R3=11

(9) IR=3239 PC=42
R2=01 Bellek[39]=01

(10) IR=33B2 PC=44
R3=11 Bellek[3B]=11

(11) IR=B248 PC=46
R2≠R0 → devamet
R2=01, R0=03

(12) IR=B038 PC=38
R0=R0 Jmp 38

(13) IR=1401 PC=3A
R4=01

(14) IR=3411 PC=3C
Bellek[11]=01
R4=01

(15) IR=5221 PC=3E
R2=R2+R1
01+01 R2=02

(16) IR=5331 PC=40
R3=R3+R1 R3=12
11+01

(17) IR=3239 PC=42
Bellek[39]=02

(18) IR=33B3 PC=44
Bellek[3B]=12
R3=12

(19) IR=B248 PC=46
R0=03 R2=02
devamet..

(20) IR = B038 PC = 38 ↰

R0 = R0 JUMP 38

(21) IR = 1402 PC = 3A

yükledim

R02 = 02 R4 = 02

(22) IR = 3412 PC = 3C

Bellek [12] = 02

(23) IR = 5221 PC = 3E

R2 = R2 + R1 R2 = 03

02 + 01

(24) IR = 7331 PC = 40

R3 = R3 + R1 R3 = 13

12 01

(25) IR = 3239 PC = 42

Bellek [39] = 03

(26) IR = 3338 PC = 44

Bellek [38] = 13

(27) IR = B248 PC = 48

R2 = R0 Jump 48 5

03 = 03

(28) IR = C000 PC = 4A

HALT