LASZLO DENISA

Subject 1 → Student 1

$b_1 = 6$, $b_2 = 16$

$x = 123554$

$y = \cancel{78321}\ 45321$ $\qquad x_{(b_1)} + y_{(b_1)} = s_{(b_1)}$

$z = 568231$

$f = 2$

c:
$$\begin{array}{r} 1\ 1\ 1\ 1\ 0\ 0 \\ 1\ 2\ 3\ 5\ 5\ 4_{(6)} + \\ 4\ 5\ 3\ 2\ 1_{(6)} \\ \hline 2\ 1\ 3\ 3\ 1\ 5_{(6)} \end{array}$$

it 1: $0_{(6)} + 4_{(6)} + 1_{(6)} = 5$

$5 / 6 = 0$, $5 \% 6 = 5$

it 2: $0_{(6)} + 5_{(6)} + 2_{(6)} = 7$

$7 / 6 = 1$, $7 \% 6 = 1$

it 3: $1_{(6)} + 5_{(6)} + 3_{(6)} = 9$

$9 / 6 = 1$, $9 \% 6 = 3$

it 4: $1_{(6)} + 3_{(6)} + 5_{(6)} = 9$

$9 / 6 = 1$, $9 \% 6 = 3$

it 5: $1_{(6)} + 2_{(6)} + 4_{(6)} = 7$

$7 / 6 = 1$, $7 \% 6 = 1$

it 6: $1_{(6)} + 1_{(6)} = 2$

$2 / 6 = 0$, $2 \% 6 = 2$

$\Rightarrow x_{(b_1)} + y_{(b_1)} = s_{(b_1)}$

$\Leftrightarrow 12355 4_{(6)} + 45321_{(6)} = 213315_{(6)}$

$\mathcal{F}(k_2) * f(k_2) = p(k_2)$

c: 0 1 0 0 0 0

5 6 8 2 3 1 (16) *

2 (16)

A D 0 4 6 2 (16)

it 1: $0_{(16)} + 1_{(16)} * 2_{(16)} = 2$

$2 / 16 = 0$, $2 \% 16 = 2$

it 2: $0_{(16)} + 3_{(16)} * 2_{(16)} = 6$

$6 / 16 = 0$, $6 \% 16 = 6$

it 3: $0_{(16)} + 2_{(16)} * 2_{(16)} = 4$

$4 / 16 = 0$, $4 \% 16 = 4$

it 4: $0_{(16)} + 8_{(16)} * 2_{(16)} = 16$

$16 / 16 = 1$, $16 \% 16 = 0$

it 5: $1_{(16)} + 6_{(16)} * 2_{(16)} = 13$

$13 / 16 = 0$, $13 \% 16 = 13 = D$

it 6: $0_{(16)} + 5_{(16)} * 2_{(16)} = 10$

$10 / 16 = 0$, $10 \% 16 = 10 = A$

$\Rightarrow \mathcal{F}(k_2) * f(k_2) = p(k_2) \Leftarrow$

$\Leftrightarrow 568231_{(16)} * 2_{(16)} = AD04621_{(16)}$

Subject 1 operations

STUDENT 2: LOLUȚĂ ȘTEFANA

$S(b_1) - y(b_1) = ?(b_1)$

$213315(6) - 045321(6)$

$123554(6)$

it 1: $0+5-1=4$

it 2: $0+1-2=-1<0 \rightarrow -1+6=5$, $\rightarrow b=-1$

it 3: $-1+3-3=-1<0 \rightarrow -1+6=5$, $\rightarrow b=-1$

it 4: $-1+3-5=-3<0 \rightarrow -3+6=3$, $\rightarrow b=-1$

it 5: $-1+1-4=-4<0 \rightarrow -4+6=2$, $\rightarrow b=-1$

$\Rightarrow S(b_1) - y(b_1) = x(b_1)$

$\Leftrightarrow 213315(6) - 45321(6) = 123554(6)$

$p(b_2) \cdot f(b_2) = ?(b_2)$

$ADO462(16) \mid 2(16)$

$568231(16)$

08

10

04

06

02

0

it 1: $0A(16) = 0*16+10 = 10$
$10 \text{ div } 2 = 5,\ 10 \bmod 2 = 0$

it 2: $08(16) = 0*16+13 = 13$
$13 \text{ div } 2 = 6,\ 13 \bmod 2 = 1.$

it 3: $10(16) = 1*16+0 = 16$
$16 \text{ div } 2 = 8,\ 16 \bmod 2 = 0$

it 4: $04(16) = 0*16+4 = 4$
$4 \text{ div } 2 = 2,\ 4 \bmod 2 = 0$

it 5: $06(16) = 0*16+6 = 6$
$6 \text{ div } 2 = 3,\ 6 \bmod 2 = 0$

it 6: $02(16) = 0*16+2 = 2$
$2 \text{ div } 2 = 1,\ 2 \bmod 2 = 0$

$\Rightarrow p(b_2) \cdot f(b_2) = z(b_2)$

$\Leftrightarrow ADO462(16) : 2(16) = 568231(16)$

Subject 2: conversions of real numbers choosing the appropriate methods

STUDENT 2: LOLUȚĂ ȘTEFANA

REAL PART

- $1(8) * 5^4(8) = \boxed{1161}$

C: 1161(8) *
1(8)

1161(8)

- $2(8) * 5^3(8) = \boxed{372}$

C: $^{0}1^{1}1^{0}$75(8) *
2(8)

372

it 1: 5·2 = 10
10/8 = 1, 10 /. 8 = 2

it 2: 1+1+4 = 15
15/8 = 1, 15 /. 8 = 7

it 3: 1+2 = 3
3/8 = 0, 3 /. 8 = 3

- $3(8) * 5^2(8) = \boxed{113}$

C: $^{1}0^{0}$31 *
3

113

it 1: 1·3+0 = 3
3/8 = 0, 3 /. 8 = 3

it 2: 0+3·3 = 9
9/8 = 1, 9 /. 8 = 1.

- $1(8) * 5(8) = \boxed{5}$
- $2(8) * 1(8) = \boxed{2}$

POWERS OF 5

$5^2(8) = 31(8)$
$5^3(8) = 175(8)$
$5^4(8) = 1161(8)$

C: $^{3}0$5(8) *
5(8)

31(8)

it 1: 5·5 = 25
25 div 8 = 3, 25 mod 8 = 1

C: $^{1}0^{0}$31(8) *
5(8)

175(8)

it 1: 1·5 = 5
5 div 8 = 0, 5 mod 8 = 5

it 2: 3·5 = 15
15 div 8 = 1, 15 mod 8 = 7

C: $^{1}4^{3}0$175(8) *
5(8)

1161(8)

it 1: 5·5 = 25
25 div 8 = 3, 25 mod 8 = 1

it 2: 3+7·5 = 3+35 = 38
38 div 8 = 4, 38 mod 8 = 6

it 3: 4+1·5 = 9
9 div 8 = 1, 9 mod 8 = 1

FRACTIONAL PART

- $3(8) + 5^{-1}(8) = \boxed{0,463}$

3,00 (8)	5 (8)
1	0,463
30	
1	
40	
1	
20	

it 1: $30(8) = 3 * 8 + 0 = 24$
$24 / 5 = 4,\ 24\ \%.5 = 4$

it 2: $40(8) = 4 * 8 + 0 = 32$
$32/5 = 6,\ 32\ \%.5 = 2$

it 3: $20(8) = 2 * 8 + 0 = 16$
$16/5 = 3,\ 16\ \%.5 = 1.$

- $2(8) + 5^{-2}(8) = \boxed{0,050}$

2,00 (8)	5 (8)
1	0,314
20	
1	
30	

it 1: $20(8) = 2 * 8 = 16$
$16/5 = 3,\ 16\ \%.5 = 1$

it 2: $10(8) = 1 * 8 = 8$
$8/5 = 1,\ 8\ \%.5 = 3$

it 3: $30(8) = 3 * 8 = 24$
$24/5 = 4,\ 24\ \%.5 = 4$

0,314 (8)	5 (8)
1	0,050
3	
1	
31	
1	
04	

it 1: $3(8) = 3$
$3/5 = 0,\ 3\ \%.5 = 3$

it 2: $31(8) = 3 * 8 + 1 = 25$
$25/5 = 5,\ 25\ \%.5 = 0$

it 3: $4(8) = 4$
$4/5 = 0,\ 4\ \%.5 = 4$

FRACTIONAL PART

- $1(8) + 5^{-3}(8) = \boxed{0,004}$

1,000 (8)	5 (8)
1	0,146
10	
1	
39	
1	
40	

it 1: $10(8) = 1 * 8 = 8$
$8/5 = 1,\ 8\ \%.5 = 3$

it 2: $30(8) = 24$
$24/5 = 4,\ 24\ \%.5 = 4$

it 3: $40(8) = 32$
$32/5 = 6,\ 32\ \%.5 = 2$

0,146 (8)	5 (8)
1	0,024
1	
14	
1	
26	

it 1: $1(8) = 1.$
$1/5 = 0,\ 1\ \%.5 = 1$

it 2: $14(8) = 1 * 8 + 4 = 12$
$12/5 = 2,\ 12\ \%.5 = 2$

it 3: $26(8) = 16 + 6 = 22$
$22/5 = 4,\ 22\ \%.5 = 2$

0,024 (8)	5 (8)
1	0,004
9	
1	
24	

it 1: $2(8) = 2$
$2/5 = 0,\ 2\ \%.5 = 2$

it 2: $24(8) = 16 + 4 = 20$
$20/5 = 4,\ 20\ \%.5 = 0$

$12312,321(5) = ?(8)$

$12312,321(5) = 1(8) * 5^{4}(8) + 2(8) * 5^{3}(8) + 3(8) * 5^{2}(8) + 1(8) * 5(8) +$

$+ 2(8) * 5^{0}(8) + 3(8) * 5^{-1}(8) + 2(8) * 5^{-2}(8) + 1(8) * 5^{-3}(8) =$

$= 1675(8) + 0,537(8) = \boxed{1675,537(8)}$

C: 0100
1161+
372
1553

C: 0000
1553+
113
1666

C: 1660 +
7
1675

0100
0,463+
0,050
0,533

0000
0,533+
0,004
0,537

LAZZO DENISA

Subject 2 → Student 1

$h = 8, \ k = 5$

$y_{(h)} = 1675, 537_{(8)}$

- $1675_{(8)} = 12312_{(5)}$.

$1675_{(8)}$ | $5_{(8)}$	it 1: $16_{(8)} = 1*8 + 6*1 = 8+6 = 14$
1 | 277	$14 / 5 = 2$, $14 \% 5 = 4$
47	it 2: $47_{(8)} = 4*8 + 7*1 = 32+7 = 39$
1	$39 / 5 = 7$, $39 \% 5 = 4$
45	
1	
(2)	

it 3: $45_{(8)} = 4*8 + 5*1 = 32+5 = 37$

$37 / 5 = 7$, $37 \% 5 = 2$.

$277_{(8)}$ | $5_{(8)}$	it 1: $27_{(8)} = 2*8 + 7*1 = 16+7 = 23$
1 | 46	$23 / 5 = 4$, $23 \% 5 = 3$
37	it 2: $37_{(8)} = 3*8 + 7*1 = 24+7 = 31$.
1	$31 / 5 = 6$, $31 \% 5 = 1$.
(1)	

$46_{(8)}$ | $5_{(8)}$	it 1: $46_{(8)} = 4*8 + 6*1 = 32+6 = 38$.
1 | 7	$38 / 5 = 7$, $38 \% 5 = 3$
(3)	

$7_{(8)}$ | $5_{(8)}$	it 1: $7_{(8)} = 7*1 = 7$
1 | 1	$7 / 5 = 1$, $7 \% 5 = 2$.
(2)	

$1_{(8)}$ | $5_{(8)}$	it 1: $1_{(8)} = 1*1 = 1$
1 | 0	$1 / 5 = 0$, $1 \% 5 = 1$.
(1)	

$\Rightarrow 1675_{(8)} = 12312_{(5)}$

- $0,537_{(8)} = 0,320_{(5)}$

- c: 3 2 4 0 — it1: $0 + 7 \cdot 5 = 35$

  $0,537_{(8)} *$

  $5_{(8)}$

  $3,333$ — $35 / 8 = 4$, $35 \% 8 = 3$

  it2: $4 + 3 \cdot 5 = 19$

  $19 / 8 = 2$, $19 \% 8 = 3$

  it3: $2 + 5 \cdot 5 = 27$

  $27 / 8 = 3$, $27 \% 8 = 3$

- c: 2 2 1 0 — it1: $0 + 3 \cdot 5 = 15$

  $0,333_{(8)} *$

  $5_{(8)}$

  $2,107$ — $15 / 8 = 1$, $15 \% 8 = 7$

  it2: $1 + 3 \cdot 5 = 16$

  $16 / 8 = 2$, $16 \% 8 = 0$

  it3: $2 + 3 \cdot 5 = 17$

  $17 / 8 = 2$, $17 \% 8 = 1$.

- c: 0 0 4 0 — it1: $0 + 7 \cdot 5 = 35$

  $0,107_{(8)} *$

  $5_{(8)}$

  $0,543$ — $35 / 8 = 4$, $35 \% 8 = 3$

  it2: $4 + 0 \cdot 5 = 4$

  $4 / 8 = 0$, $4 \% 8 = 4$.

  it3: $0 + 1 \cdot 5 = 5$

  $5 / 8 = 0$, $5 \% 8 = 5$

$\Rightarrow 0,537_{(8)} = 0,320_{(5)}$

$\Rightarrow 1675,537_{(8)} = \boxed{12312,320_{(5)}}$

LASZLO DENISA

Subject 3 → Option 3 : fixed-point representation of real nr.

Student 1

X = 12345, 67

- 12345 = 8192 + 4096 + 32 + 16 + 8 + 1 =

= $1*2^{13} + 1*2^{12} + 1*2^5 + 1*2^4 + 1*2^3 + 1*2^0$ =>

=) 12345 = 11000000111001(2)

- 0,67 = 0,52702 43(8) = 0,101 010 111 000 010 100 011 (

0,67 * 8 = 5,36

0,36 * 8 = 2,88

0,88 * 8 = 7,04

0,04 * 8 = 0,32

0,32 * 8 = 2,56

0,56 * 8 = 4,48

0,48 * 8 = 3,84

S	J = 15				F = 16			
0	011	0000	0011	1001	,	1010	1011	0001	0101
	3	0	3	9		A	B	8	5

12345, 67 = 11000000111001, 101010111000010100011(2)

Subject 3 : representations

Option 3

STUDENT 2 : LOLUȚĂ ȘTEFANA

$H(16) = 3039,AB85$

FIXED-POINT-NOTATION : $i = 15, f = 16$.

0011 | 0000 | 0011 | 1001 | 1010 | 1011 | 1000 | 0101

3 0 3 9 , A B 8 5

sign bit

REAL PART : $1100000111001 = 1 \cdot 2^0 + 1 \cdot 2^3 + 1 \cdot 2^4 + 1 \cdot 2^5 + 1 \cdot 2^{12} + 1 \cdot 2^{13} = \boxed{12345}$

IMAGINARY PART : 0,101 | 010 | 111 | 000 | 010 | 100 | 011

5 2 7 0 2 4 3

$3 : 8 = 0,375$

$4,37 : 8 = 0,54$

$2,54 : 8 = 0,31$

$0,31 : 8 = 0,03$

$7,03 : 8 = 0,8$

$2,8 : 8 = 0,35$

$5,35 : 8 = \boxed{0,66}$

$\Rightarrow \boxed{12345,66}$