

Test 1: 20 points

Time 85 Minutes

1. Convert numbers (3 points)

Base 2      100110100111001111001110    to base 16

Solution

Group into 4 and use conversion table to match

1001 1010 0111 0011 1100 1110

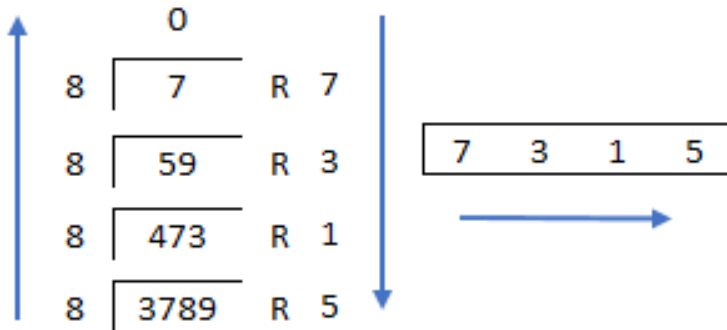
9    A    7    3    C    E

$(100110100111001111001110)_2 = (9A73CE)_{16}$

Base 10	Base 2	Base 4	Base 8	Base 16
0	0	0	0	0
1	1	1	1	1
2	10	2	2	2
3	11	3	3	3
4	100	10	4	4
5	101	11	5	5
6	110	12	6	6
7	111	13	7	7
8	1000	20	10	8
9	1001	21	11	9
10	1010	22	12	A
11	1011	23	13	B
12	1100	30	14	C
13	1101	31	15	D
14	1110	32	16	E
15	1111	33	17	F

Base 10 3789 to base 8

Solution:



Base 4 1320033 to base 16

Solution:

Convert base 4 number to base 2 and then use the binary number to convert to base 16.

1 3 2 0 0 3 3  
 01 11 10 00 00 11 11

$$(1320033)_4 = (01111000001111)_2$$

0001 1110 0000 1111  
 1 E 0 F

$$(1320033)_4 = (01111000001111)_2 = (1E0F)_{16}$$

Note that you can also use groupings to go from base 4 to base 16 the same way that you can go from base 2 to base 4. Just have to remember what how many digits is needed to go from base 4 to base 16. To present the digits of base 16 in base 4 you need two digits (look at the table above).

1320033 → 01 32 00 33  
           1 E 0 F

$$(1320033)_4 = (1E0F)_{16}$$

2. Find the result of the following statement in base 8 (5 points)

$$230_4 (10011101_2) + 74_8 (f0e9_{16} - 76548_{10})$$

$$230 \rightarrow \begin{array}{ccc} 2 & 3 & 0 \\ 10 & 11 & 00 \end{array}$$

$$(230)_4 = (101100)_2$$

$$101100 \rightarrow \begin{array}{cc} 101 & 100 \\ 5 & 4 \end{array}$$

$$(230)_4 = (101100)_2 = (54)_8$$

$$10011101 \rightarrow \begin{array}{ccc} 010 & 011 & 101 \\ 2 & 3 & 5 \end{array}$$

$$(10011101)_2 = (235)_8$$

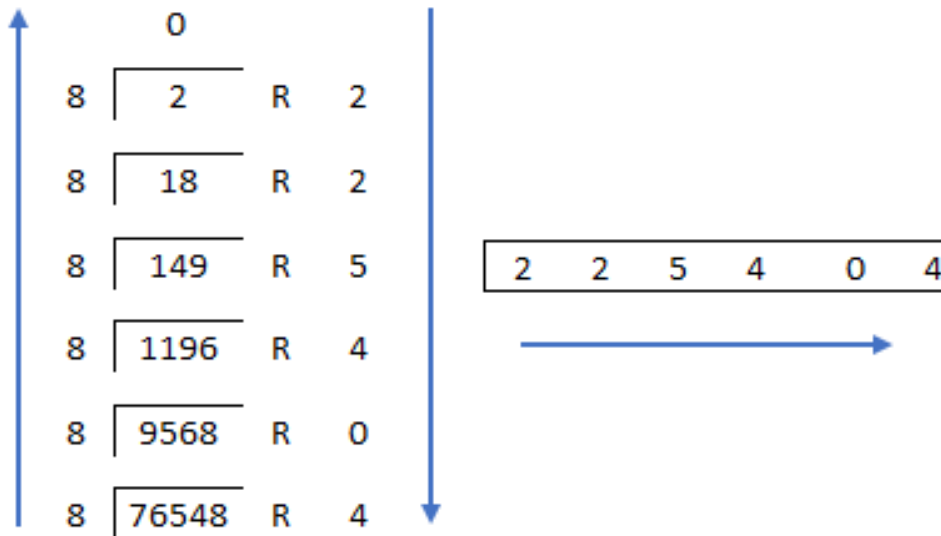
$$(74)_8 = (74)_8$$

$$F0E9 \rightarrow \begin{array}{cccc} F & 0 & E & 9 \\ 1111 & 0000 & 1110 & 1001 \end{array}$$

$$1111000011101001 \rightarrow \begin{array}{cccccc} 001 & 111 & 000 & 011 & 101 & 001 \\ 1 & 7 & 0 & 3 & 5 & 1 \end{array}$$

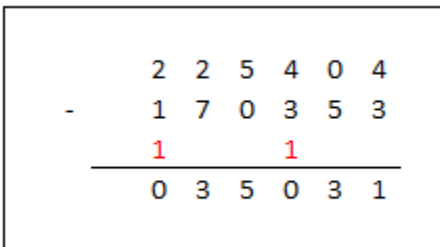
$$(F0E9)_{16} = (170351)_8$$

$$(76548)_{10} = (225404)_8$$



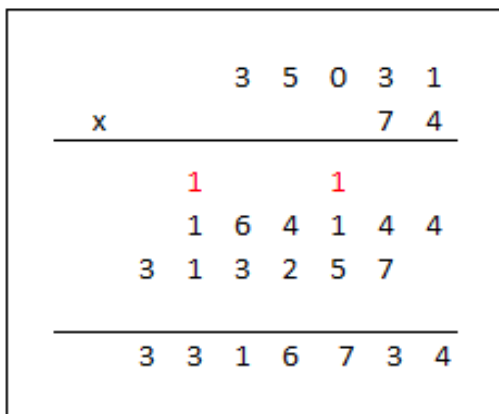
Performing subtraction:

$$(f0e9_{16} - 76548_{10}) = (170351 - 225404)_8 = (-35031)_8$$



Perform multiplication:

$$74_8 (f0e9_{16} - 76548_{10}) = -(74 * 35031)_8 = -(3316734)_8$$





3. A homework assignment to perform some EXCEL operations due on 5:00pm on Friday is submitted by 4 students. Identify the actions taken in terms of “Rejected”, “Accepted”, “Penalized” with proper reasons. (2 points)

Student 1: Emailed the Excel sheet and the report to the group at 5:10pm on Friday. Subject line read “My homework”

- 1. error sending to group instead of instructor*
- 2. 5:10pm is late and by the time error is corrected and resubmitted it is even more late*
- 3. subject line incorrect*
- 4. Because report is not submitted the homework receives 0 points.*

Student 2: Emailed the Excel sheet and handed the report to me in the classroom at 10:00am on Thursday on two beautifully hand written page. Email Subject line read “IEGR-204 My homework”

- 1. no report should be handed to me*
- 2. Hand written work not accepted*
- 3. Email subject line incorrect and will be rejected*

Student 3: Put the solution, computer processed, in a large envelop, slid it under my door at 4:30pm on Friday with proper requirements. Sent an email with the subject line, “IGER 204: I slid my homework under your door.”

- 1. folder not envelop*
- 2. Email subject line incorrect and will be rejected*

Student 4. After the deadline solution is sent, student meets the instructor, explains that he/she was not aware that homework is sent by email or posted to Facebook and ask whether he/she can submit again.

- 1. the answer is no*

Question #4 (4 points) – An EXCEL sheet contains 100 rows of 4 columns of data. Each data represents a product that a grocery store chain carries in its 100 stores. Grocery store owners wants to eliminate the products from the stores that are not selling enough. They have collected the data for the last 12 months of sales and placed it in columns A-D (store name, product 1, product 2, and product 3). Explain how to do the operation requested. (5 points)

Write an IF statement in column E that checks how the store in column A has performed in the past year. If it has sold above average of sales of all stores for that product keep that product, otherwise eliminate it from that store. The outcome of the column E should be statements like this, “Keep Product 1 Eliminate Product 2 Keep Product 3” and so on.

*This question was deleted from the test*

5. What is my exact office hours? (0.75 point)

*Monday 10am-1pm*

*Wednesday 10am-1pm*

6. Who is teaching the following courses in Industrial Engineering Department?  
(1.25 point)

IEGR 410 – *Dr. Salimian*

IEGR 351 – *Dr. Kattel*

IEGR 461 – *Dr. Pitts*

IEGR 467 – *Dr. Bardhan*

IEGR 451 – *Dr. Chen*

7. Explain two main jobs of IE. (3 points)

*Any one of the followings is good enough*

- 1. Ergonomics / Human Factors Engineering (designing the workplace to better accommodate “human factors” (human abilities and behaviors), thereby yielding more efficient operations and fewer accidents or injuries).*
- 2. Facility Design (aimed at operational efficiency)*
- 3. Management Decision Making / Operations Research (using statistics and other forms of data analysis to aid in making management decisions)*
- 4. Manufacturing Engineering (concerned with all aspects of manufacturing operations – materials, parts, equipment, facilities, labor, finished products, delivery, etc.).*
- 5. Quality Control (using sampling, statistical analysis and other techniques to assess and maintain the quality of products or services provided by a business or other organization)*
- 6. Work Design (defining jobs that individual workers do in performing the overall work of the organization, with the typical focus being on optimizing manufacturing operations).*
- 7. Worker Productivity (conducting time and motion studies, setting work performance standards, and proposing new/improved work methods)*



8. Explain how you did the eye zoom in PowerPoint (2 points)

*See the video on class Facebook page*

9. Select one of the FB posts that you had (if no FB posts – select one of mine) and explain what and how exactly it covered. Don't use general statements like "it was a tutorial on Excel", etc. (2 points)

*Individual responses*

10. What is this color? (1 point)

99FFC5

*The RGB color has a hexadecimal value of 99 for red, FF for green and C5 for blue.*

*Equivalent decimal value of 99 is 153 ( $9*1+9*16$ ) which is more than middle point (0-255). FF is the maximum two-digit number in hexadecimal (255) indicating strong green. C5 is 197 in decimal ( $5*1+12*16$ ). So this color is a combination of all green and lots of blue and red. Although red is less than blue.*

*This was not required, but here are the colors:*

990000

00FF00

0000C5

99FFC5

