**Experiments in 8086-2008 Nov Examination**

1. A sentence (consisting of at least 10 characters with all syntax excepting full stop OR without any syntax) are stored in memory. Write a program to reverse the sentence and compare it with the original sentence. If it equals to the original then store a special character in the memory. Example: Rama is a good boy----- yob doog a si amaR
2. A set of 4-byte signed / unsigned numbers are stored in the memory. Write a program so that all the numbers grater than 10 will be moved to another array whereas the numbers greater than -10 but less than or equal to 10 moved to another array. (Use ES and DS for arrays and use segment override prefix).
3. A set of 4-byte unsigned numbers are stored in the memory. Write a program so that all the numbers greater than 100 will be moved to another array whereas the numbers greater than 1000 but less than or equal to 100000 moved to another array. (Use ES and DS for arrays and use segment override prefix).
4. Sort an array of 4-byte signed number in ascending/descending order. (You can use any sort algorithm.)(linear sort, Replacement sort and radix sort)
5. Convert an unsigned 8-digited decimal (packed) number to a 4-byte hex number. Use the following algorithm: Let D7D6D5D4D3D2D1D0 be digits of the decimal number.

Calulate (…((D7\*10+ D6)\*10+ D5)\*10+D4)\*10…+D0.

1. Convert an unsigned 4-byte number to 10 digited decimal numbers.(Use the division method).Hint: convert the number to a 5-byte number by augmenting 00 at the left. Then proceed the division.
2. Develop a program in 8086 to add/subtract two 8-byte signed numbers represented in represented in sign and magnitude form and indicate the error.
3. Develop a program in 8086 to add/subtract two 8-byte signed numbers represented in sign and 2’s complement form and indicate the error.
4. Develop a program in 8086 to multiply two 4-byte signed numbers represented in sign and 2’s complement form resulting to an 8-byte number.
5. Develop a program in 8086 to multiply two 4-byte signed numbers represented in sign and magnitude form resulting to an 8-byte number.
6. Develop a program in 8086 to multiply two 4-byte signed numbers represented in sign and 2’s complement form resulting to an 4-byte number.
7. An 11-bit information code available in memory. Convert to 15 bit Hamming code.
8. Generate a set of random numbers by the following methods. Take seed number 7FE1 and multiply it by 7F and then divide it by 223-1. The remainder will be the random number and will be next seed number.
9. Write a program in 8086 to prove that sum of n first odd numbers equals to square of n where n is less than one byte unsigned integer.
10. Write a program in 8086 to prove that sum of n first n cubes equals to square of n is less than 22
11. Develop a program in 8086 to divide 8-byte number by a two byte number represented in sign and magnitude form and indicate the error.
12. Develop a program in 8086 to divide 8-byte unsigned number by a two byte unsigned number represented in sign and magnitude form and indicate the error. Note that you should adopt the method of unsigned division. Sign of remainder must be sign of dividend.
13. Develop a program in 8086 to divide 8-byte unsigned number by a two byte unsigned number represented in sign and 2’s complement form and indicate the error. Note that you should adopt the method of unsigned division. Sign of remainder must be sign of dividend.
14. Find the sum of odd numbers of an array of 4-bte signed numbers (use as many bytes as required to obtain the correct result).
15. Generate a CRC code for a 4-byte data when the generating function is 

Algorithm

AX

BX

CX

DX

Set DX=8005 Set CX=0000 AX:BX=N

1. Develop a recursive procedure to calculate Γn.(4-bytes)
2. Distinguish between iteration and recursion. Develop a program to find out an where an=an-1+an-2 where a1 = a2=1
3. Write a procedure that evaluates following integer function Fn = Fn-1+ Fn-2- Fn-3 with F2=3, F1=2 and F0=1 .
4. Write a procedure that evaluates following integer function Fn=n\*( Fn-1-1) with F0=2.
5. Write ALP to evaluate A+B\*C where A,B and C are one word unsigned integers but result is two-word integer.
6. Write ALP to evaluate A+B\*C where A,B and C are one word signed integers but result is a two-word integer.
7. Write ALP to evaluate (A+B)\*C where A,B and C are one word unsigned integer but result is two-word integer.
8. Write ALP to evaluate (A+B)\*C where A,B and C are one word signed integer but result is two-word integer.
9. Write ALP to evaluate (A\*B)/C and A\*(B/C) where A,B and C are unsigned word integer with A<C<B. Compare the result. All operation are standard integer operations.
10. Write ALP to evaluate (A\*B)/C and A\*(B/C) where A,B and C are signed word integer with A<C<B. Compare the result. All operation are standard integer operations.
11. Find the HCF of two unsigned-integers of one word long A and B by successive division method. Find also LCM.
12. Determine the remainder when a 4-byte unsigned integer is divided by FH without performing the division.
13. Determine the remainder when a 4-byte unsigned integer is divided by 11H without performing the division.
14. Write a program to add 4-digited packed decimal numbers and indicate the overflow error if exists.
15. Write a program to subtract a 4-digited packed decimal number from another 4-digited packed decimal number and indicate the overflow error if exists.
16. Multiply two two digited decimal packed numbers resulting to a four digited packed decimal number.
17. Determine integer square-root of a two-byte unsigned integer. The algorithm is assume: X as the initial value of the square-root as the LS-byte the of the original number Y. Then till Y-X2≤X.