Word Size register

Program A	Program C	Program D	Program E	Program F	Program G

Mov DX,25665
Mov AH,2
Int 33
Mov DL,DH
Int 33
Stop
	Mov CL,240
	Mov CH,100
	Add CL,20
	Mov DL,'n'
	Jnc L1
	Mov DL,'c'
	L1:
	Mov AH,2
	Int 33
	Mov DL,CH
	Int 33
	STOP
		Mov AH,1
		Int 33
		Mov AH,0
		Mov CX,0
		Mov BL,100
		L1:
		Add CX,AX
		Sub BL,1
		Cmp BL,0
		JG L1
		Mov AH,2
		Mov DL,CH
		Int 33
		Mov DL,CL
		Int 33
		STOP
			Mov AH,1
			Int 33
			Mov DX,20000
			Mov AH,0
			L1:
			Sub DX,AX
			Cmp DX,AX
			JGE L1
			Mov AH,2
			Int 33
			STOP
				Mov AH,1
				Int 33
				Mov DX,20000
				L1:
				Sub DL,AL
				Sbb DH,0
				Cmp DH,0
				JA L1
				Cmp DL,AL
				JAE L1
				Mov AH,2
				Int 33
				STOP
					.model small
					.data
					a dw 25650,51
					b db 48,49,36
					.code
					Mov AX,@data
					Mov DS,AX
					Lea DX,a
					Mov AH,9
					Int 21h
					Mov AH,76
					Int 21h

Program B
Mov CH,3
Mov CL,32
Mov DL,'P'
Cmp CX,800
Jne L1
Mov DL,'Q'
L1:Mov AH,2
Int 33
STOP					

Program A: outputs Ad. DX=25665 $\Rightarrow$ DH=DX div 256=100 and DL=DX mod 256=65.

Program B: outputs Q. CH=3 and CL=32 $\Rightarrow$ CX=256*CH+CL=800.

Program C: outputs cd. When Add CL,20 is replaced by ADD CX,20 then output is ne. 240+20=260. Hence CL=4 and carry is true.

CX=100*256+240=25840. After addition it is 25840+20=25860=101*256+4

Program D: reads a letter and finds 100 times of its ASCII code. The result is in CX. The program prints the letters whose ascii codes are in CH and CL respectively. Input g output (<. Since g=103 hence answer 10300. CH=10300 div 256=40[(] CL=10300 mod 256=60[<]. Alternatively AX can be thought as 256*AH+AL.

In Mov, Add, Sub, Cmp etc. instructions either both registers should be word size or byte size. e.g. Add AX,BL is not allowed. However it can be done as Mov BH,0 Add AX,BX or Add AL,BL and Adc AH,0.

Program E: reads a letter and finds 20000 mod (ascii code of input). Input F output 2.

Program F: Same. Here JA is used in place of JG. Similarly JB and JL and equivalent. They are used for unsigned comparison.

If AL+BL $\geq$ 256 then carry flag is set. If AL<BL then flag is set in Sub AL,BL

SBB AH, α $\equiv$ AH=AH$-\alpha-1$. If carry flag is set Otherwise AH=AH$-\alpha$.

ADC AH, α $\equiv$ AH=AH$+\alpha+1$. If carry flag is set Otherwise AH=AH$+\alpha$.

Program G: Outputs2d3 01. When Mov a,25665 is put before Mov AH,9 then o/p Ad3 01. Mov a,53 $\rightarrow$ 5 3 01 Mov b,53 $\rightarrow$ 2d3 51 Mov b,25665 $\rightarrow$ error. When Lea BX,b and Mov [BX], byte ptr 53 $\rightarrow$ 2d3 51. word ptr 53 $\rightarrow$ 2d3 5 . wordptr 25665 $\rightarrow$ 2d3 Ad. Lea BX,a byte ptr 53 $\rightarrow$ 5d3 01 word ptr 53 $\rightarrow$ 5 3 01.

1. Read a letter and find (2000 div ascii code of input). Input x=2 output '(' Reason: ascii codes of '2' and '(' are 50 and 40 respectively. I/p F o/p (ascii 28)
2. Read 10 letters and print the letter whose ascii code is the average of their ascii codes. Input dZAdZAFdfZ output W (ASCII 87). Hint: sum 872.
3. Read two letters and find the product of their ascii codes. Let the answer is in CX. Print CH and CL. kx $\rightarrow$ 2(. Since k=107 x=120 Result is 12840=50*256+40.

4. Read two letters. Let their ascii codes be x and y respectively. The program finds x+(x+1)+(x+2)+…y. Input 3E output (ascii 4)t. 51+52+…+69=1140=256*4+116.
5. Read two letters and store them in CH and CL respectively. Print the letter whose ascii code is CX mod 120. 2a $\rightarrow$9. Since 50*256+97=12897 mod 120=57.
6. In above question find the smallest factor of CX.
7. Write a program, which reads five digits and stores the value of the number in CX. e.g. if input is 12897 and CH and CL are printed then the output will be 2a.
8. Read two letters and store them in CH and CL respectively. Print the contents of CX (in base 10) in reverse order. For above example Input 2a output 79821. [Caution: CX div 10 will be more than 256, hence a word size register may be required].