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| **Cairo University** | **CMPN201** | **Total: 20 Points** |
| **Faculty of Engineering** | **Microprocessor Systems I** | **2018-2019** |
| **Computer Eng. Department** | **Midterm Exam** | **One Hour** |

**This is an open-book, open notes exam. All electronic devices - Except calculators - are forbidden.  
Make any reasonable assumptions (if necessary)**

Name: Code:

1. **[12] Identify the choice that best completes the statement or answers the question**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C | **1- To copy the content of bx to ax** | | | | |
| a) copy ax, bx | b) cpy ax, bx | c) mov ax, bx | | d) copy bx, ax |
| D | **2- To put the two bytes of ax in the stack** | | | | |
| A) put ax | b) put ax,2 | c) push ax,2 | | d) push ax |
| D | **3- Increasing the address bus size decreases** | | | | |
| a) the number of addressable locations | b) the bus bandwidth | c) available memory size | | d) none of the above |
| D | **4- The main enhancement of 8086 over 8085 is** | | | | |
| a) bus size | b) accessible memory size | c) register size | | d) parallelism |
| D | **5- the addressing mode of mov ax,[cx] is** | | | | |
| a) register | b) direct | c) register indirect | d) none of the above | |
| B | **6- The relation between virtual memory vs cache memory looks like the relation between** | | | | |
| a) arrays vs pointers | b) resources vs performance | c) segment registers vs index registers | | d) portability vs availability |

**2- [14] Using one line**

1. Reverse the first nibble of CH

XOR CH,00001111B XOR CH,0FH

1. Clear the content of cx [Using six different commands]

|  |  |  |
| --- | --- | --- |
| 1) MOV CX,0 | 4) LBL: LOOP LBL | SAL CX,16 |
| 2) SUB CX,CX | 5) SHL CX,16 | AND CX,0 |
| 3) XOR CX,CX | 6) SHR CX,16 |  |

**3- [10] what is the contents of (CF-ZF-SF-PF-AF) flags after:**

mov cx,0Beach

|  |  |
| --- | --- |
| **Flag** | **Value (1/0)** |
| CF | 1 |
| ZF | 0 |
| SF | 1 |
| PF | 1 |
| AF | 1 |

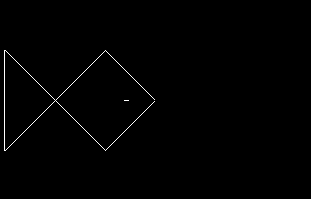
mov ax,0FCadh

add ax, cx

|  |  |  |  |
| --- | --- | --- | --- |
| **Memory Location** | **Value (H)** | **Memory Location** | **Value (H)** |
| **1** | 03 H | **7** | 0 |
| **2** | 56 H | **8** | 87 |
| **3** | 23 H | **9** | 12 |
| **4** | 87 | **10** | 87 |
| **5** | 0 | **11** | 12 |
| **6** | Garbage  or 0 |  |  |

**4- [8] What is the content of memory after the following code**

|  |  |
| --- | --- |
| .model small  .stack 64  .data  a db 3h,56h,23h  dw 55h,23h  b dw 87h  c equ 12h  .code  main proc far  mov ax,@data | mov ds,ax  mov bl,a  mov cx,b  mov a+3,cl  mov a[5],bh  add b[1],c  mov dx,b  mov b[2],dx  hlt  main endp  end main |

**5- [5] Put (√) in front of only five illegal commands**

|  |  |
| --- | --- |
|  | **Illegal?** |
| .model small |  |
| .data |  |
| a do 12h | **√** |
| b db 3456h | **√** |
| .code |  |
| main proc far |  |
| mov ax,@data |  |
| mov ds,ax |  |
| mov es,3010h | **√** |
| xor cx,cx |  |
| add cl,a |  |
| xchg cl,ch |  |
| mov bx,offset b |  |
| mov dx,F3ABh | **√** |
| push dl | **√** |
| Add DX,CX |  |
| pop Ax |  |
| main endp |  |
| end main |  |

**6- [12] The output of the following program is** : [FISH ]

|  |  |  |  |
| --- | --- | --- | --- |
| .model small  .stack 64  .code  main proc  mov ah,0  mov al,13h  int 10h  mov ah,0ch  mov al,0fh  mov cx,130  mov dx,100  d2:int 10h | inc cx  cmp cx,135  jnz d2  mov cx,10  mov si,cx  mov dx,50  DR1: int 10h  call mirr  inc si  xchg si,cx  int 10h  call mirr | add cx,100  int 10h  call mirr  sub cx,100  add cx,50  add dx,50  int 10h  call mirr  sub cx,50  sub dx,50  xchg si,cx  inc dx | cmp dx,100  jnz dr1  main endp  mirr proc  mov di,200  sub di,dx  xchg di,dx  int 10h  xchg di,dx  ret  mirr endp  end main |