

CSCI2160Quiz14F11ShiftDoubleINVOKE Name: Brandon Buchanan

1. Given the below register and its contents, describe what will be the result after the assembly instruction is executed.

AX: C9 D5 rol ax,1 AX: 93AB SF X ZF X CF 1 OF X
1100 1001 1101 0101
1001 0011 1010 1011
9 3 A B

AX: C9 D5 ror ax,1 AX: E4EA SF X ZF X CF 1 OF 0
1110 0100 1110 1010
E 4 E A

AX: C9 D5 rcl ax,1 AX: 93AB SF X ZF X CF 1 OF X
Before CF: 1

AX: C9 D5 rcr ax,1 AX: E4EA SF X ZF X CF 1 OF 0
Before: CF: 1

ECX: 34 56 78 12 shld ecx,eax,8 ECX: 56 78 12 ABCF 0 ZF 0
EAX: AB CD EF 90 EAX: AB CD EF 90 SF 0

ECX: 34 56 78 12 shrd ecx,eax,8 ECX: 90 34 56 78CF 0 ZF 0
EAX: AB CD EF 90 EAX: AB CD EF 90 SF 1

2. a) Given the below function definition for func
 b) and that it is to interact with function calls from Windows API
 c) `iZ = func(iXcoord, iYcoord, dRadius);`
 d) The function definition in a higher level language is:

```
int func( int iXcoord, int iYcoord, intdouble dRadius)
{
    int iA, iB;
    .
    .
    .
    return iA;
} //end of func(int,int,double)
```

- e) Also given the below beginning of the assembly language instructions:

```
func: proc
    push ebp, esp
    mov esp, ebp
    sub esp, 8 ;reserve space for iA, iB
    push ebx ;preserve ebx
    push ecx ;preserve ecx
    push edx ;preserve edx
begin:
    .
    .
    .
done:
    pop edx ;restore preserved registers
    pop ecx
    pop ebx
    pop ebp ← add esp, 8
    ret 8
func: endp
```

- f) Problem: rewrite the method using the high-level syntax with the PROC directive

```
func PROC stdcall local iA, iB uses ebx, ecx, edx
begin:
    .
    .
done:
    ret 8
func
```

- g) Write the corresponding ~~PROTO~~ statement

```
func PROTO stdcall (iX:dword, iY:dword, iRadius:dword)
```

- h) Write the corresponding assembly statement for c) to invoke the method in f)

INVOKE func, ³2, ³3, 10 ; circle at (2,3) with a radius of 10