

Procedure Documentation
Group – 7
Bank Management System

Team Members:

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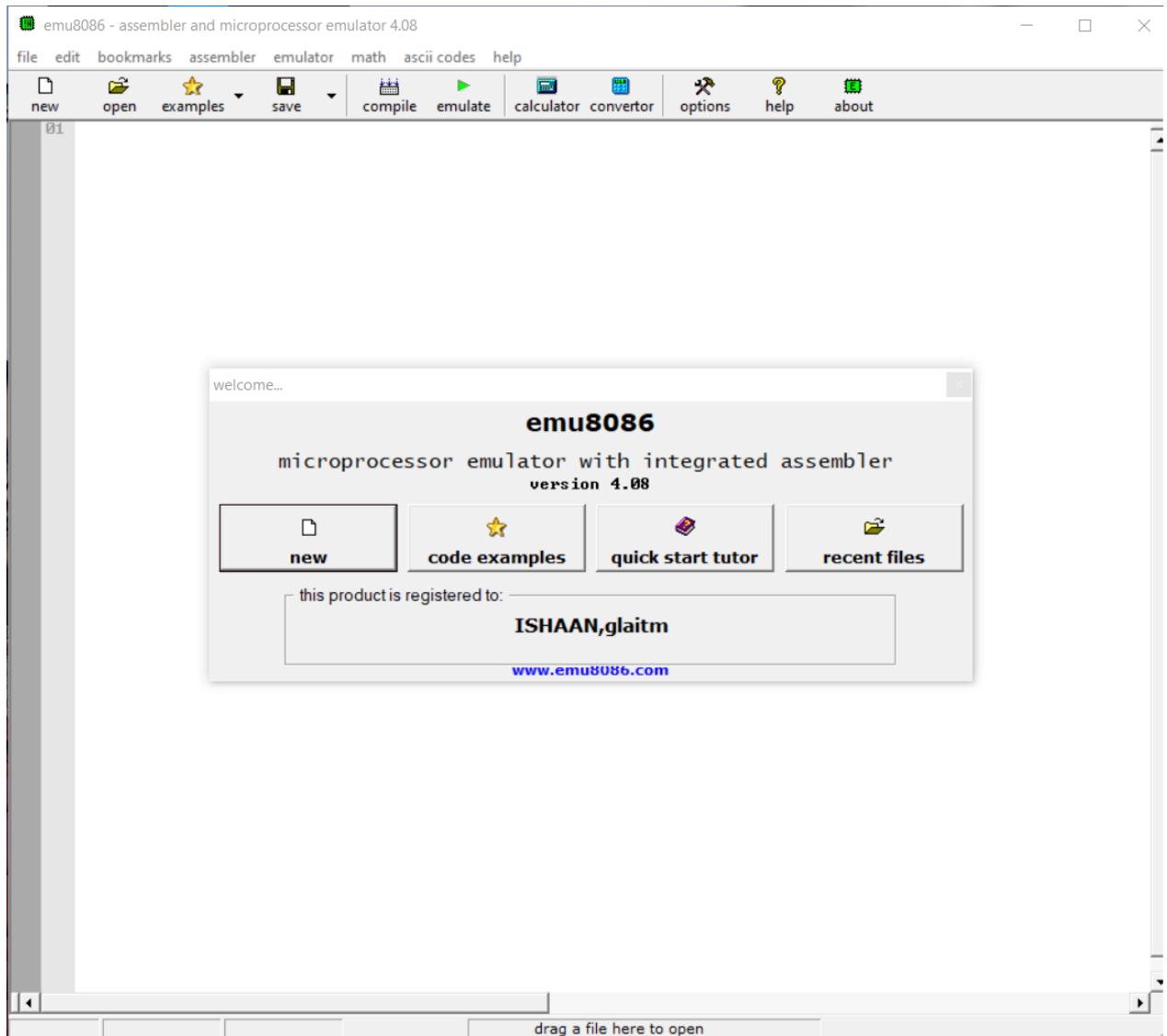
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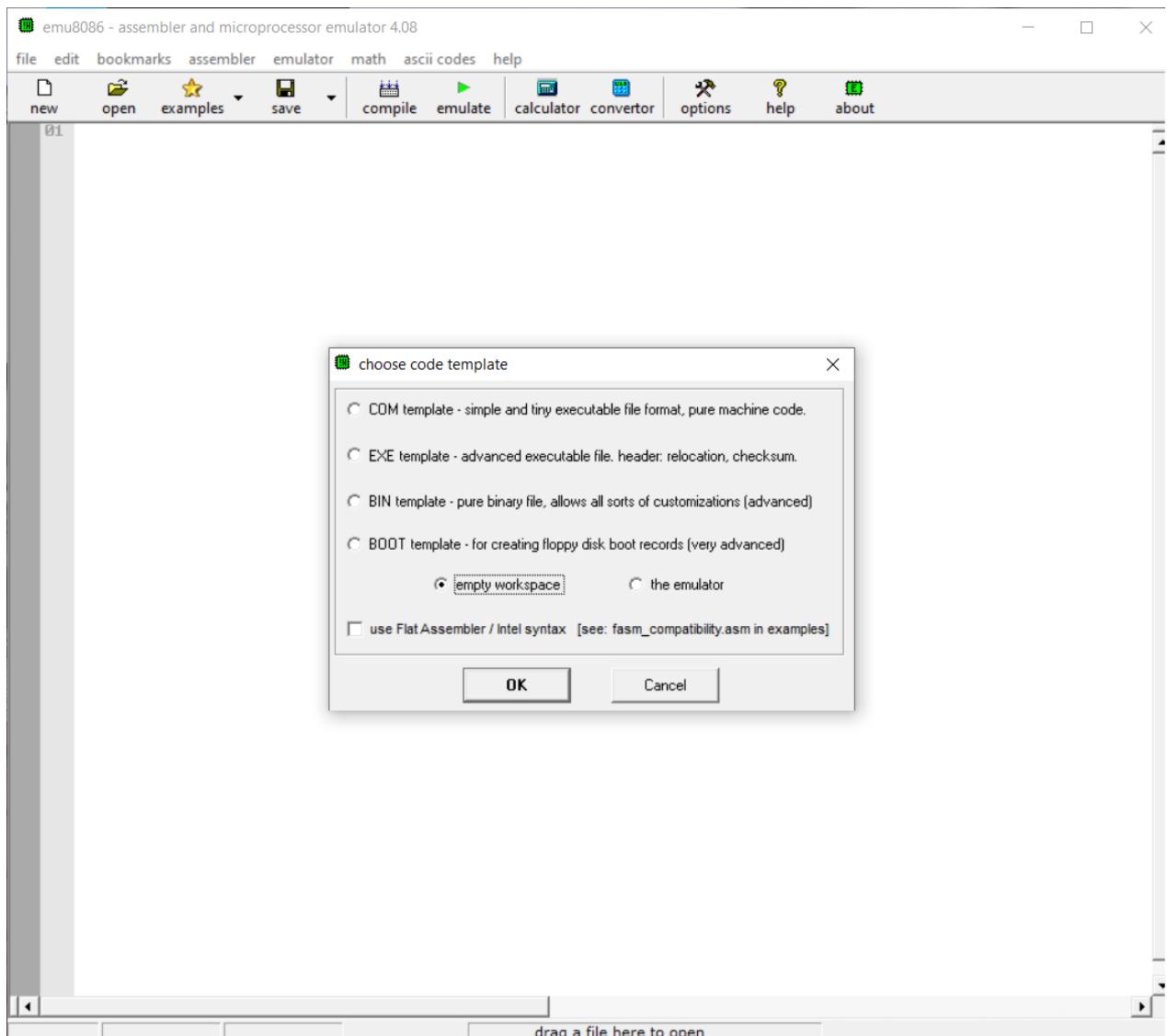
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Procedure:

1. Open emu8086 and create a new blank project by first selecting the “new” option and then check the “empty workspace” option and click ok. This will create a blank workspace in emu8086 where we can enter our code.





2. After you have opened the new workspace, copy the code given below into the workspace, the code file is

also provided by us in the project folder, so you can also open it directly using the open option:

Code:

```

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Project Title: Bank Management System
001 :Project Title: Bank Management System
002 .model small
003 .stack 100h
004 .data
005 dnsq0 db '|'
006 dnsq1 db '|'
007 dnsq2 db '|'
008 dnsq3 db '|'
009 dnsq4 db '|'
010 dnsq5 db '|'
011 dnsq6 db '|'
012 dnsq7 db '|'
013 dnsq8 db '|'
014
015 opmsg1 db '1. Create new Account$'
016 opmsg2 db '2. Print Account Details$'
017 opmsg3 db '3. Withdraw Money$'
018 opmsg4 db '4. Deposit Money$'
019 opmsg5 db '5. Reset Account $'
020 opmsg6 db '6. Modify Account Details$'
021
022 opmsg8 db 'Press Enter To Return to Main Menu $'
023
024 insg db 'What Do You Want To Do ? : $'
025 inputCode db ?
026
027 ;Account details
028
029 accountName db 100 dup('$')
030 accountPIN db 100 dup('$') ;This keeps track how many digit a pin is
031 accountPINcount dw 0
032 totalMoney dw 0
033 inputNumCount ?
034
035 ;Option 1 <Create Account> Messages
036 op1nsq1 db '1. Enter Account Name: $'
037 op1nsq2 db '2. Enter Account Pin: $'
038 op1nsq3 db 'Successfully Created New Account ! $'
039
040 ;Option 2 <Print details> Messages
041 op2nsq1 db 'Account Name: $'
042 op2nsq2 db 'Currently Saved Account PIN: $'
043 op2nsq3 db 'Total Money Currently Saved : $'
044 op2nsq4 db 'Total Money Left: $'
045 op2nsq5 db 'You Have No Money $'
046
047 ;Option 4 <Money> Messages
048 op4nsq1 db '1. Rs 100$'
049 op4nsq2 db '2. Rs 500$'
050 op4nsq3 db '3. Rs 1000$'
051 op4nsq4 db '4. Rs 5000$'
052 op4nsq5 db 'Enter Code: $'
053 op4nsq6 db 'You Are Withdrawing Too MUCH !$'
054
055 ;Option 5 <Reset> Messages
056 op5nsq1 db 'Account Has been reset successfully$'
057
058 ;Option 6 <Modify Account> Messages
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```



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059
060 ;Option 6 <Modify Account> Messages
061 op6nsq0 db 'Account Details Successfully Changed !$'
062 op6nsq1_1 db '1. New Account Name < old: $'
063 op6nsq1_2 db '2. New Account Pin < old: $'
064 op6nsq2_1 db '1. New Account Name < old: $'
065
066 ;PIN Protection
067 pinop_nsq1 db 'Enter PIN: $'
068 pinop_nsq2 db 'Account NOT created ... $'
069
070
071 .code
072 ;::::::::::: U T I L S ::::::::::::
073
074 ;::::::::::::::::::
075 ;::::::::::::::::::
076 ;::::::::::::::::::
077 ;::::::::::::::::::
078 ;Enter to Continue
079 proc etc
080  etc:
081  mov ah,1
082  int 21h
083  cmp al,13
084  je mainloop
085  jmp etcin
086  ret
087 etc endp
088
089 ;This checks whether the account has been created or not using the pin Count
090 checkAccountCreated proc
091  cmp accountPINcount,0
092  je accountNotCreated
093  ret
094
095  accountNotCreated:
096  call clearScreen
097  printString pinop_nsq2
098  call etc
099
100 checkAccountCreated endp
101
102 ;Just mov number to ax and call this proc
103 printNumber PROC
104  ;initialize count
105  mov cx,0
106  mov ax,0
107  label1:
108  ; if ax is zero
109  cmp ax,0
110  je print1
111
112  ;initialize bx to 10
113  mov bx,10
114
115  ; extract the last digit
116  div bx
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```

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115 ; extract the last digit
116 div bx
117
118 ;push it in the stack
119 push dx
120
121 ;increment the count
122 inc cx
123
124 ;set dx to 0
125 xor dx,dx
126 jmp label1
127
128
129 ;check if count
130 ;is greater than zero
131 cmp cx,0
132 je exitprint
133
134 ;pop the top of stack
135 pop dx
136
137 ;add 48 so that it
138 ;represents the ASCII
139 ;value of digits
140 add dx,48
141
142 ;interrupt to print a
143 ;character
144 mov ah,02h
145 int 21h
146
147 ;decrease the count
148 dec cx
149 jmp print1
150
151 exitprint:
152 ret
153 printNumber ENDP
154
155 clearScreen proc near
156 call newLine
157 call newLine
158 ret
159 clearScreen endp
160
161 newLine proc near
162 mov ah,2
163 mov dl,10
164 int 21h
165 mov dl,13
166 int 21h
167 ret
168 newLine endp
169
170 macro printString str
171 mov ah,9
172 lea dx,str
173 int 21h
174
175
176
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230    call newline
231    printString opmsg2
232    call newline
233    printString opmsg3
234    call newline
235    printString opmsg4
236    call newline
237    printString opmsg5
238    call newline
239    printString opmsg6
240    call newline
241    printString opmsg7
242    call newline
243    DisplayMenu endp
244
245    GetInputMenuSystem proc near
246        call newline
247        printString msg
248        mov ah,1
249        int 21h
250        mov inputCode,al
251        ret
252    GetInputMenuSystem endp
253
254    ;----- O P T I O N 1  -> CREATE ACCOUNT -----
255
256
257
258    macro ISop1 str
259        mov si,offset str
260    input:
261        mov ah,1
262        int 21h
263        cmp al,13
264        je labelop1_1
265        mov al,11
266        inc si
267        inc si
268        jmp input
269
270    exitMac:
271        ret
272    enda
273
274    macro ISop12 str
275        mov si,offset str
276    input2:
277        mov ah,1
278        int 21h
279        cmp al,13
280        je labelop1_2
281        inc accountPINcount
282        mov [si],al
283        inc si
284        inc si
285        jmp input2
286
287    exitMac2:
288        ret
289
290
291
292    proc etcopl1
293        etcopl1in:
294        mov ah,1
295        int 21h
296        cmp al,13
297        je mainloop
298        jmp etcopl1in
299
300    etcopl1 endp
301
302    opl proc
303        call clearScreen
304
305        call newline
306        call newline
307        printString opmsg1
308        ISop1 accountName
309
310        labelop1_1:
311        call newline
312        printString opmsg2
313        ISop12 accountPIN
314
315        labelop1_2:
316
317        call newline
318        call newline
319        printString opmsg3
320        call etcopl1
321
322    opl endp
323
324    ret
325    opl endp
326
327    ;----- O P T I O N 2  -> PRINT DETAILS -----
328
329
330
331
332    proc etcop2
333        call newline
334        printString opmsg8
335        etcop2in:
336
337        mov ah,1
338        int 21h
339        cmp al,13
340        je mainloop
341        jmp etcop2in
342
343    etcop2 endp
344
345    mov ah,4c
```

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287    exitMac2:
288        ret
289    endn
290
291
292    proc etcopl1
293        etcopl1in:
294        mov ah,1
295        int 21h
296        cmp al,13
297        je mainloop
298        jmp etcopl1in
299
300    etcopl1 endp
301
302    opl proc
303        call clearScreen
304
305        call newline
306        call newline
307        printString opmsg1
308        ISop1 accountName
309
310        labelop1_1:
311        call newline
312        printString opmsg2
313        ISop12 accountPIN
314
315        labelop1_2:
316
317        call newline
318        call newline
319        printString opmsg3
320        call etcopl1
321
322    opl endp
323
324    ret
325    opl endp
326
327    ;----- O P T I O N 2  -> PRINT DETAILS -----
328
329
330
331
332    proc etcop2
333        call newline
334        printString opmsg8
335        etcop2in:
336
337        mov ah,1
338        int 21h
339        cmp al,13
340        je mainloop
341        jmp etcop2in
342
343    etcop2 endp
344
345    mov ah,4c
```

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```
345 op2 proc
346     call checkAccountCreated ;check whether the account has been created or not
347     call getPinInput ;gets the pin input for verification
348     call clearScreen
349
350
351     call newline
352     call newline
353
354     printString op2msg1
355     printString accountName
356     call newline
357
358     printString op2msg2
359     printString accountPIN
360     call newline
361
362     printString op2msg4
363     mov ax,totalAmount
364     cmp ax,0
365     je noMoneyError
366     call printNumber
367     call newline
368     call etcop2
369
370     noMoneyError:
371     printString op2msg5
372     printString op2msg6
373     call newline
374     call etcop2
375
376     ret
377
378 op2 endp
379
380
381 ;::::::::::::::::::
382 ; O P T I O N 3 -> W I D T H D R A W M O N E Y
383 ;
384 ;
385 ;::::::::::::::::::
386
387 op3 proc
388
389     call checkAccountCreated ;check whether the account has been created or not
390     call getPinInput ;gets the pin input
391     call clearScreen
392
393
394     call newline
395     call newline
396     call newline
397
398     printString op4msg1
399     call newline
400     printString op4msg2
401     call newline
402     printString op4msg3
403     call newline
```

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```
403     call newline
404     printString op4msg4
405     call newline
406
407     call inputAmountCode
408
409     cmp inputAmountOption,'1'
410     je ucop1
411
412     cmp inputAmountOption,'2'
413     je ucop2
414
415     cmp inputAmountOption,'3'
416     je ucop3
417
418     cmp inputAmountOption,'4'
419     je ucop4
420
421 ;check if withdraw amount <= totalAmount in acc
422 ucop1:
423     mov bx,totalAmount
424     cmp bx,100
425     jl novayb
426     sub totalAmount,100
427     jmp mainloop
428 ucop2:
429     mov bx,totalAmount
430     cmp bx,500
431     jl novayb
432     sub totalAmount,500
433     jmp mainloop
434 ucop3:
435     mov bx,totalAmount
436     cmp bx,2000
437     jl novayb
438     sub totalAmount,2000
439     jmp mainloop
440 ucop4:
441     mov bx,totalAmount
442     cmp bx,5000
443     jl novayb
444     sub totalAmount,5000
445     jmp mainloop
446
447 ;error message for widthdrawing too much
448 novayb:
449
450     call newline
451     call newline
452     printString op4msg6
453     call etcop4
454
455     ret
456
457 op3 endp
458
459 ;::::::::::::::::::
460 ; O P T I O N 4 -> D E P O S I T M O N E Y
461 ;::::::::::::::::::
```

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OPTION 4 -> DEPOSIT MONEY

```
461 ;::::::::::::::::::
462 ;::::::::::::::::::
463 ;::::::::::::::::::
464 ;::::::::::::::::::
465 proc etcop4
466 call newline
467 printString opmsg8
468 etcopin:
469 mov ah,1
470 int 21h
471 cmp al,13
472 jne mainloop
473 jmp etcop4in
474 ret
etcop4 endp
475 proc inputAmountCode
476 call newline
477 call getPinInput
478 printString opmsg5
479 mov ah,1
480 int 21h
481 mov inputAmountOption,al
482 ret
inputAmountCode endp
483
484 op4 proc
485 call checkAccountCreated ;check whether the account has been created or not
486 call getPinInput ;gets the pin input
487 call clearScreen
488
489 call newline
490 call newline
491
492 printString op4msg1
493 call newline
494 printString op4msg2
495 call newline
496 printString op4msg3
497 call newline
498 printString op4msg4
499 call newline
500
501 call inputAmountCode
502
503 cmp inputAmountOption,'1'
504 je dcop1
505
506 cmp inputAmountOption,'2'
507 je dcop2
508
509 cmp inputAmountOption,'3'
510 je dcop3
511
512 cmp inputAmountOption,'4'
513 je dcop4
514
515 done1:
516
517 done1:
518
519 done1:
```

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OPTION 5 -> RESET ACCOUNT

```
519 dcop1:
520 add totalAmount,100
521 jne mainloop
522 dcop2:
523 add totalAmount,500
524 jmp mainloop
525 dcop3:
526 add totalAmount,2000
527 jmp mainloop
528 dcop4:
529 add totalAmount,5000
530 jmp mainloop
531
532 ret
533
534 op4 endp
535
536 ;::::::::::::::::::
537 ;::::::::::::::::::
538 ;::::::::::::::::::
539 ;::::::::::::::::::
540 ;::::::::::::::::::
541
542 proc etcop5
543 call newline
544 printString opmsg8
545 etcopin:
546 mov ah,1
547 int 21h
548 cmp al,13
549 je mainloop
550 jmp etcop5in
551 ret
etcop5 endp
552
553 op5 proc
554
555 call checkAccountCreated ;check whether the account has been created or not
556 call getPinInput ;gets the pin input
557 ;Do the rest of the work .. display the data
558 call clearScreen
559
560 mov si,[offset accountName]
561 mov cx,30
562 l1:
563 mov [si],'
564 inc si
565 loop l1
566
567 mov cx,30
568 mov si,[offset accountPIN]
569 l2:
570 mov [si],'
571 inc si
572 loop l2
573
574 mov totalAmount,0
575 add accountPINcount,a
576
577 done1:
578
579 done1:
```

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```
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577    mov accountPINcount,0 ;reset pin count
578    printString op5msg1
579    call etcop5
580    ret
581    op5 endp
583
585 ;***** O P T I O N 6 -> MODIFY ACCOUNT DETAILS ****
586
587
588
589 proc etcop6
590    call newline
591    printString opmsg8
592    etcop6in:
593        int 21h
594        cmp al,13
595        je mainloop
596        jmp etcop6in
597
598    retf
599    etcop6 endp
600
601 macro ISop6 str
602     mov si,offset str
603     ISop6input:
604         mov ah,1
605         int 21h
606         cmp al,13
607         je ISop6_1
608         mov [si],al
609         inc si
610         jmp ISop6input
611
612 ends
613
614 macro ISop6_2 str
615     mov si,offset str
616     new accountPINcount,0 ;reset pin count
617     ISop6_2input:
618         int 21h
619         cmp al,13
620         je labelop6_2
621         inc accountPINcount ;increment pin account again
622         mov [si],al
623         inc si
624         jmp ISop6_2input
625
626 ends
627
628
629 op6 proc
630     call checkAccountCreated ;check whether the account has been created or not
631     call getPinInput ;gets the pin
632     call clearScreen
633
634     call newline
635
636
637 ;account name
638     printString op6msg1_1
639     printString accountName
640     printString op6msg1_2
641
642     ISop6 accountName ;input accountName
643
644     labelop6_1:
645
646     call newline
647     printString op6msg2_1
648     printString accountPIN
649     printString op6msg2_2
650     ISop6_2 accountPIN
651
652     labelop6_2:
653
654     ;finished MSG
655     call newline
656     call newline
657     call newline
658     printString op6msg0
659     call etcop6
660
661
662     ret
663     op6 endp
664
665 ;***** E N T R Y P O I N T ****
666
667
668
669
670 Main proc
671     nov ax,0data
672     nov ds,ax
673
674     mainloop:
675
676         call clearScreen
677         call DisplayMenu
678         call GetInputMenuSystem
679
680         cmp inputCode,'0'
681         je exit
682
683         cmp inputCode,'2'
684         je op2
685
686         cmp inputCode,'4'
687         je op4
688
689         cmp inputCode,'3'
690         je op3
691
692         cmp inputCode,'5'
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```

668
669     ret
670     op6 endp
671
672     Main proc
673         mov ax,@data
674         mov ds,ax
675
676         mainloop:
677             call clearScreen
678             call DisplayMenu
679             call GetInputMenuSystem
680
681             cmp inputCode,'0'
682             je exit
683
684             cmp inputCode,'2'
685             je op2
686
687             cmp inputCode,'4'
688             je op4
689
690             cmp inputCode,'3'
691             je op3
692
693             cmp inputCode,'6'
694             je op6
695
696             cmp inputCode,'1'
697             je op1
698
699             cmp inputCode,'5'
700             je op5
701
702             jmp mainloop
703
704         exit:
705             call newLine
706             call newLine
707
708             call newLine
709
710             call newLine
711             mov ah,4ch
712             int 21h
713
714         main endp
715
716     end main

```

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3. After you have entered the code click on “emulate” option present in top menu icon. This will compile your code and check for any errors.

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:Project Title: Bank Management System

```

001 .model small
002 .stack 100h
003 .data
004 dns$0 db '|'
005 dns$1 db '|'
006 dns$2 db '|'
007 dns$3 db '|'
008 dns$4 db '|'
009 dns$5 db '|'
010 dns$6 db '|'
011 dns$7 db '|'
012 dns$8 db '|'
013 dns$9 db '|'
014
015
016 opmsg1 db '1. Create New Account$'
017 opmsg2 db '2. Print Account Details$'
018 opmsg3 db '3. Withdraw Money $'
019 opmsg4 db '4. Deposit Money $'
020 opmsg5 db '5. Reset Account $'
021 opmsg6 db '6. Modify Account Details$'
022
023 opmsg8 db 'Press Enter To Return to Main Menu $'
024
025 insg db 'What Do You Want To Do ? : '
026 inputCode db ?
027
028 ;Account details
029 accountName db 100 dup('$')
030 accountPIN db 100 dup('$')
031 accountPINcount db 0 ;This keeps track how many
032 totalAmount db 0
033 inputAmount db ?
034
035
036 ;Option 1 <Create Account> Messages
037 op1nsq1 db '1. Enter Account Name: $'
038 op1nsq2 db '2. Enter Account PIN: $'
039 op1nsq3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 <Print details> Messages
042 op2nsq1 db '1. Enter Account Name: $'
043 op2nsq2 db 'Currently Saved Account PIN: $'
044 op2nsq3 db 'No Accounts Currently Saved !$'
045 op2nsq4 db 'Total Money Left: $'
046 op2nsq5 db 'You Have No Money !$'
047
048 ;Option 4 <Money> Messages
049 op4nsq1 db '1. Rs 500$'
050 op4nsq2 db '2. Rs 5000$'
051 op4nsq3 db '3. Rs 2000$'
052 op4nsq4 db '4. Rs 50000$'
053 op4nsq5 db 'Enter Option !$'
054 op4nsq6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 <Reset> Messages
057 op5nsq1 db 'Account Has been reset successfully$'
058
059 ;Option 6 <Modify Account> Messages

```

line: 717 col: 10 drag a file here to open

After the code is successfully compiled without any errors following screen will appear before you.

The screenshot shows a Windows desktop environment with a debugger application open. The main window is titled "emulator: bank management system.exe." It contains several panes: a left pane for assembly code, a top-left pane for file operations, a top-right pane for debugger controls (Load, step back, single step, run), a bottom-left pane for registers, a bottom-right pane for memory dump, and a bottom center pane for various debugger flags. A smaller window titled "original source code" is visible in the background, showing the C-like source code for the bank management system. The assembly code pane highlights a loop starting at address 077C:0417.

```

;Project Title: Bank Management System
.model small
.stack 100h
.data
dns9 db ' '
dns91 db ' '
dns92 db ' '
dns93 db ' '
dns94 db ' '
dns95 db ' '
dns96 db ' '
dns97 db ' '
opmsg1 db '1. Create New Account$'
opmsg2 db '2. Print Account Details$'
opmsg3 db '3. Withdraw Money$'
opmsg4 db '4. Deposit Money$'
opmsg5 db '5. Reset Account$'
opmsg6 db '6. Modify Account Details$'
opmsg8 db 'Press Enter To Return To Main Menu$'
insg db 'What Do You Want To Do ? : $'
inputCode db ?
:account details
accountName db 100 dup('$')
accountPIN db 100 dup('$')
accountPINcount dw 0 ;This keeps track how many digits entered
totalAmount dw 0
inputAmountOption db ?
:Option 1 <Create Account> Messages
op1nsq1 db '1. Enter Account Name:$'
op1nsq2 db '2. Enter PIN:$'
op1nsq3 db 'Successfully Created New Account !$'
:Option 2 <Print details> Messages
op2nsq1 db 'Account Name: $'
op2nsq2 db 'Currently Saved Account PIN: $'
op2nsq3 db 'No Accounts Currently Saved !$'
op2nsq4 db 'Total Money Left: ?'
op2nsq5 db 'You Have No Money !$'
:Option 4 <Money> Messages
op4nsq1 db '1. Withdraw Money:$'
op4nsq2 db '2. Rs 5000$'
op4nsq3 db '3. Rs 2000$'
op4nsq4 db '4. Rs 1000$'
op4nsq5 db 'Enter Code:$'
op4nsq6 db 'You Are Withdrawing Too MUCH !$'
:Option 5 <Reset> Messages
op5nsq1 db 'Account Has been reset successfully$'
:Option 6 <Modify Account> Messages

```

4. Now, click on the “run” option as we can see in above picture. This will run our code and then a menu option will appear on your screen. This will contain 6 options:
 1. Create new account
 2. Print account details
 3. Withdraw money
 4. Deposit money
 5. Reset account
 6. Modify account details

User can then choose the option according to the tasks they want to perform.

(Menu option was developed by Deeksha)

```

;edit:D:\Documents\Desktop\VIT3\fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm
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;Project Title: Bank Management System
001 .model small
002 .stack 100h
003 .data
004 
005 .code
006     dsmsg1 db '1. Create new Account$',0
007     opmsg2 db '2. Print Account Details$',0
008     opmsg3 db '3. Withdraw Money$',0
009     opmsg4 db '4. Deposit Money$',0
010     opmsg5 db '5. Reset Account$',0
011     opmsg6 db '6. Modify Account Details$',0
012     opmsg7 db 'Press Enter To Return to Main Menu$',0
013     opmsg8 db 'What Do You Want To Do ? : $'
014     imsg db ?
015     inputCode db ?
016     ;Account details
017     accountName db 100 dup('$')
018     accountPIN db 100 dup('$')
019     accountBal db 100 dup(0) ;This keeps track how many accounts are created
020     totalAmount dw 0
021     inputAmountOption db ?
022
023     ;Option 1 <Create Account> Messages
024     op1msg1 db '1. Enter Account Name: $'
025     op1msg2 db '2. Enter Account PIN: $'
026     op1msg3 db 'Successfully Created New Account + $'
027
028     ;Option 2 <Print details> Messages
029     op2msg1 db 'Account Name: $'
030     op2msg2 db 'Currently saved Account PIN: $'
031     op2msg3 db 'No Accounts Currently Saved +$'
032     op2msg4 db 'Total Money Left: $'
033     op2msg5 db 'You Have No Money $'
034
035     ;Option 4 <Money> Messages
036     op4msg1 db '1. Rs 5000$'
037     op4msg2 db '2. Rs 1000$'
038     op4msg3 db '3. Rs 5000$'
039     op4msg4 db '4. Rs 5000$'
040     op4msg5 db 'Enter Choice: $'
041     op4msg6 db 'You Are Withdrawing Too MUCH +$'
042
043     ;Option 5 <Reset> Messages
044     op5msg1 db 'Account Has been reset successfully$'
045
046     ;Option 6 <Modify Account> Messages
047     op6msg1 db ' '
048
049     ;Input Menus
050     GetInputMen proc
051         mov ah,1
052         int 21h
053         mov bl,al
054         cmp bl,13
055         jne 050
056         mov ah,0
057         int 21h
058         mov al,bl
059         mov bl,0
060         int 21h
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0975        int 21h
0976        mov ah,0
0977        int 21h
0978        mov al,bl
0979        mov bl,0
0980        int 21h
0981        mov ah,0
0982        int 21h
0983        mov al,bl
0984        mov bl,0
0985        int 21h
0986        mov ah,0
0987        int 21h
0988        mov al,bl
0989        mov bl,0
0990        int 21h
0991        mov ah,0
0992        int 21h
0993        mov al,bl
0994        mov bl,0
0995        int 21h
0996        mov ah,0
0997        int 21h
0998        mov al,bl
0999        mov bl,0
0100        int 21h
0101        mov ah,0
0102        int 21h
0103        mov al,bl
0104        mov bl,0
0105        int 21h
0106        mov ah,0
0107        int 21h
0108        mov al,bl
0109        mov bl,0
0110        int 21h
0111        mov ah,0
0112        int 21h
0113        mov al,bl
0114        mov bl,0
0115        int 21h
0116        mov ah,0
0117        int 21h
0118        mov al,bl
0119        mov bl,0
0120        int 21h
0121        mov ah,0
0122        int 21h
0123        mov al,bl
0124        mov bl,0
0125        int 21h
0126        mov ah,0
0127        int 21h
0128        mov al,bl
0129        mov bl,0
0130        int 21h
0131        mov ah,0
0132        int 21h
0133        mov al,bl
0134        mov bl,0
0135        int 21h
0136        mov ah,0
0137        int 21h
0138        mov al,bl
0139        mov bl,0

```

The screenshot displays a Microsoft Windows environment with several open windows. The main window is an assembly editor titled 'edit: D:\Documents\Desktop\VIT3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm'. It contains assembly code for a bank management system, including labels for data and code segments, and various messages for user interaction. To the right of the assembly editor is an 'emulator: bank management system.exe' window, which is currently 'waiting for input'. This window shows a menu with six options: 1. Create new Account, 2. Print Account Details, 3. Withdraw Money, 4. Deposit Money, 5. Reset Account, and 6. Modify Account Details. Below the menu, a message says 'What Do You Want To Do ?: 1'. Further down, it shows '1. Enter Account Name: aviral' and 'Successfully Created New Account ! -'. At the bottom of the emulator window are buttons for 'clear screen' and 'change font'. Below the assembly editor is another window titled 'original source code' containing assembly language code. The status bar at the bottom of the assembly editor window shows 'line: 717 col: 10'.

6. Now, we will choose the “print account details” option, this option will help us to print the details of the account like the account name, the account pin and the amount present in the account. First, it will ask for the respective pin which you want to access, after your pin matches, it displays the account details. The account we created in previous step does not have nay money, so the text “you have no money” is shown.

(print account details option was created by Aviral Goyal)

```

001 ;Project Title: Bank Managment System
002 .model small
003 .stack 100h
004 .data
005     dnsq0 db '|'
006     dnsq1 db '|'
007     dnsq2 db '|'
008     dnsq3 db '|'
009     dnsq4 db '|'
010     dnsq5 db '|'
011     dnsq6 db '|'
012     dnsq7 db '|'
013
014
015     opmsg1 db '1. Create new Account$'
016     opmsg2 db '2. Print Account Details$'
017     opmsg3 db '3. Withdraw Money $'
018     opmsg4 db '4. Deposit Money $'
019     opmsg5 db '5. Reset Account$'
020     opmsg6 db '6. Modify Account Details$'
021
022     opmsg8 db 'Press Enter To Return to Main Menu $'
023
024     insg db 'What Do You Want To Do ? : $'
025
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountPINcount dw 8 ;This keeps track how many digits
033     totalAmount dw 0
034     inputAmountOption db ?
035
036 ;Option 1 <Create Account> Messages
037     op1msg1 db '1. Enter Account Name: $'
038     op1msg2 db '2. Enter Account Pin: $'
039     op1msg3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 <Print details> Messages
042     op2msg1 db 'Account Name: $'
043     op2msg2 db 'Currently Saved Account PIN: $'
044     op2msg3 db 'No Accounts Currently Saved !$'
045     op2msg4 db 'Total Money Left: $'
046     op2msg5 db 'You Have No Money !$'
047
048 ;Option 4 <Money> Messages
049     op4msg1 db '1. Rs 100$'
050     op4msg2 db '2. Rs 500$'
051     op4msg3 db '3. Rs 2000$'
052     op4msg4 db '4. Rs 5000$'
053     op4msg5 db 'Enter Code: $'
054     op4msg6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 <Reset> Messages
057     op5msg1 db 'Account has been reset successfully$'
058
059 ;Option 6 <Modify Account> Messages

```

line: 717 col: 10 drag a file here to open

7. We will then choose the “deposit money” option to deposit money into our account. Once, the user selects this option, system asks for pin to verify the user. Once, the pin is matched, the user enters amount in particular denominations of: 100, 500, 2000, 5000. The amount selected is then added to their accounts. If now we print account details, the amount present in the account will be shown there.

(Deposit amount option was developed by V Srishti)

edit: D:\Documents\Desktop\VIT\3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm

file edit bookmarks assembler emulator math ascii codes help

```

001 ;Project Title: Bank Management System
002 .model small
003 .stack 100h
004 .data
005
006     dns$0 db ' '
007     dns$1 db '|'
008     dns$2 db ' '
009     dns$3 db '|'
010    dns$4 db ' '
011    dns$5 db '|'
012    dns$6 db ' '
013    dns$7 db '|'
014
015
016     opmsg1 db '1. Create new Account$'
017     opmsg2 db '2. Print Account Details$'
018     opmsg3 db '3. Withdraw Money$'
019     opmsg4 db '4. Deposit Money$'
020     opmsg5 db '5. Reset Account$'
021     opmsg6 db '6. Modify Account Details$'
022
023     opmsg8 db 'Press Enter To Return to Main Menu $'
024
025     insg db 'What Do You Want To Do ? : $'
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountPINcount db 0 ;This keeps track how many digits
033     totalMoney db 0
034     inputAmountOption db ?
035
036 ;Option 1 <Create Account> Messages
037     op1nsn1 db '1. Enter Account Name:$'
038     op1nsn2 db '2. Enter Account Pin:$'
039     op1nsn3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 <Print details> Messages
042     op2nsn1 db 'Account Name: $'
043     op2nsn2 db 'Currently Saved Account PIN: $'
044     op2nsn3 db 'Total Money Available: $'
045     op2nsn4 db 'Total Money Left: $'
046     op2nsn5 db 'You Have No Money $'
047
048 ;Option 4 <Money> Messages
049     op4nsn1 db '1. Rs 100$'
050     op4nsn2 db '2. Rs 500$'
051     op4nsn3 db '3. Rs 1000$'
052     op4nsn4 db '4. Rs 5000$'
053     op4nsn5 db 'Enter Code: $'
054     op4nsn6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 <Reset> Messages
057     op5nsn1 db 'Account Has been reset successfully$'
058
059 ;Option 6 <Modify Account> Messages

```

line: 717 col: 10 drag a file here to open

edit: D:\Documents\Desktop\VIT\3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm

file edit bookmarks assembler emulator math ascii codes help

```

001 ;Project Title: Bank Management System
002 .model small
003 .stack 100h
004 .data
005
006     dns$0 db ' '
007     dns$1 db '|'
008     dns$2 db ' '
009     dns$3 db '|'
010    dns$4 db ' '
011    dns$5 db '|'
012    dns$6 db ' '
013    dns$7 db '|'
014
015
016     opmsg1 db '1. Create new Account$'
017     opmsg2 db '2. Print Account Details$'
018     opmsg3 db '3. Withdraw Money$'
019     opmsg4 db '4. Deposit Money$'
020     opmsg5 db '5. Reset Account$'
021     opmsg6 db '6. Modify Account Details$'
022
023     opmsg8 db 'Press Enter To Return to Main Menu $'
024
025     insg db 'What Do You Want To Do ? : $'
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountPINcount db 0 ;This keeps track how many digits
033     totalMoney db 0
034     inputAmountOption db ?
035
036 ;Option 1 <Create Account> Messages
037     op1nsn1 db '1. Enter Account Name:$'
038     op1nsn2 db '2. Enter Account Pin:$'
039     op1nsn3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 <Print details> Messages
042     op2nsn1 db 'Account Name: $'
043     op2nsn2 db 'Currently Saved Account PIN: $'
044     op2nsn3 db 'Total Money Available: $'
045     op2nsn4 db 'Total Money Left: $'
046     op2nsn5 db 'You Have No Money $'
047
048 ;Option 4 <Money> Messages
049     op4nsn1 db '1. Rs 100$'
050     op4nsn2 db '2. Rs 500$'
051     op4nsn3 db '3. Rs 1000$'
052     op4nsn4 db '4. Rs 5000$'
053     op4nsn5 db 'Enter Code: $'
054     op4nsn6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 <Reset> Messages
057     op5nsn1 db 'Account Has been reset successfully$'
058
059 ;Option 6 <Modify Account> Messages

```

line: 717 col: 10 drag a file here to open

8. Next, is the withdraw option. Similar to deposit money option, here also system first asks for user pin and after verification, the user selects in particular denomination, the amount he wants to withdraw. If the account has enough money, then that much amount is reduced from the account and the new amount available is displayed. Otherwise, if not enough amount is present then the following message is displayed: “You Are Withdrawing Too MUCH”

(Withdraw money was developed by V Srishti)

The screenshot displays a development environment for assembly language. On the left, the assembly code for a bank management system is shown in a text editor window. The code includes sections for creating accounts, depositing money, withdrawing money, resetting accounts, and modifying account details. It uses various memory locations like .data, .bss, and .stack, and defines strings for menu options and messages. On the right, there are two windows: one for the emulator showing a menu with options 1 through 6, and another for the debugger showing register values (AX=02, BX=13, CX=00, DX=00, SI=005B, DI=00F6, BP=0000, DS=0720, ES=0700) and memory dump. A small window at the bottom shows assembly code for a subroutine.

```

001 ;Project Title: Bank Management System
002
003 .model small
004 .stack 100h
005 .data
006
007     dnsq0 db '|'
008     dnsq1 db '|'
009     dnsq2 db '|'
010     dnsq3 db '|'
011     dnsq4 db '|'
012     dnsq5 db '|'
013     dnsq6 db '|'
014
015     opmsg1 db '1. Create New Account$'
016     opmsg2 db '2. Print Account Details$'
017     opmsg3 db '3. Withdraw Money $'
018     opmsg4 db '4. Deposit Money $'
019     opmsg5 db '5. Reset Account $'
020     opmsg6 db '6. Modify Account Details$'
021
022     opmsg8 db 'Press Enter To Return To Main Menu $'
023
024     inq db 'What Do You Want To Do ? : $'
025
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountBal dw 0 ;This keeps track how many
033     totalAmount dw 0
034     inputAmountOption db ?
035
036 ;Option 1 (Create Account) Messages
037     op1msg1 db '1. Enter Account Name: $'
038     op1msg2 db '2. Enter Account Pin: $'
039     op1msg3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 (Print details) Messages
042     op2msg1 db 'Account Name? $'
043     op2msg2 db 'Currently Saved Account PIN: $'
044     op2msg3 db 'Total Amounts Currently Saved: $'
045     op2msg4 db 'Total Money Left: $'
046     op2msg5 db 'You Have No Money $'
047
048 ;Option 4 (Money) Messages
049     op4msg1 db '1. Rs 100$'
050     op4msg2 db '2. Rs 500$'
051     op4msg3 db '3. Rs 1000$'
052     op4msg4 db '4. Rs 5000$'
053     op4msg5 db 'Enter Code: $'
054     op4msg6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 (Reset) Messages
057     op5msg1 db 'Account Has been reset successfully$'
058
059 ;Option 6 (Modify Account) Messages

```

9. Now we see the “modify account” option, this option will help us modify the details like account name or account pin of our account. It will first ask for pin to verify user, after that it will ask the user to enter new username, if we want to change, we can enter the new name or we can just enter the same name if we do not want to change the account name. Same we can do with the account pin.

(Modify account option was developed by K Arjun Rao)

edit: D:\Documents\Desktop\VIT\3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm

file edit bookmarks assembler emulator math ascii codes help

```

001 ;Project Title: Bank Management System
002 .model small
003 .stack 100h
004 .data
005
006     dnsq8 db '          '
007     dnsq1 db ' '
008     dnsq2 db ' '
009     dnsq3 db ' '
010    dnsq4 db ' '
011    dnsq5 db ' '
012    dnsq6 db ' '
013    dnsq7 db ' '
014
015
016     opmsg1 db '1. Create new Account$'
017     opmsg2 db '2. Print Account Details$'
018     opmsg3 db '3. Withdraw Money $'
019     opmsg4 db '4. Deposit Money $'
020     opmsg5 db '5. Reset Account $'
021     opmsg6 db '6. Modify Account Details$'
022
023     opmsg8 db 'Press Enter To Return to Main Menu $'
024
025     insg db 'What Do You Want To Do ? : $'
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountPINcount dw 0 ;This keeps track how many d
033     totalAmount dw 0
034     inputAmountOption db ?
035
036 ;Option 1 (Create Account) Messages
037     op1nsq1 db '1. Enter Account Name: $'
038     op1nsq2 db '2. Enter Account Pin: $'
039     op1nsq3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 (Print details) Messages
042     op2nsq1 db 'Account Name: $'
043     op2nsq2 db 'Currently Saved Account PIN: $'
044     op2nsq3 db 'No Accounts Currently Saved ! $'
045     op2nsq4 db 'Total Money Left: $'
046     op2nsq5 db 'You Have No Money !'
047
048 ;Option 4 (Money) Messages
049     op4nsq1 db '1. Rs 100$'
050     op4nsq2 db '2. Rs 500$'
051     op4nsq3 db '3. Rs 2000$'
052     op4nsq4 db '4. Deposit Money $'
053     op4nsq5 db 'Enter Code: $'
054     op4nsq6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 (Reset) Messages
057     op5nsq1 db 'Account Has been reset successfully$'
058
059 ;Option 6 (Modify Account) Messages

```

line: 54 col: 112 drag a file here to open

emulator: bank management system.exe...

file math debug view external virtual devices virtual drive help

Load step back stop step delay ms: 0

registers H L

AX 01 00

BX 00 00

CX 00 00

DX 05 00

CS F400

IP 0200

SS 0710

SP 00E0

BP 0000

SI 0390

DI 0000

DS 0720

ES 0700

emulator screen (80x25 chars)

1. Create new Account
2. Print Account Details
3. Withdraw Money
4. Deposit Money
5. Reset Account
6. Modify Account Details
What Do You Want To Do ?: 6
Enter PIN: ****
1. New Account Name < old: aviral >: srishti
2. New Account Pin < old: 3585 >: 1234
Account Details Successfully Changed !

clear screen change font 8-16

original source code...

578 printString op5nsq1

579 call etcop5

580 ret

581 op5 endp

582 :

583 :::::::::::::::::::::

584 ;:::::::::::::::::::

585 ;::::::::::: O P T I :::::::::::::

586 :::::::::::::::::::::

587 proc etcop6

588 call newline

589 printString opmsg8

590 etcopin:

591 op6 endp

592 int 21h

593 :::::::::::::::::::::

594 :::::::::::::::::::::

595 :::::::::::::::::::::

edit: D:\Documents\Desktop\VIT\3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm

file edit bookmarks assembler emulator math ascii codes help

```

001 ;Project Title: Bank Management System
002 .model small
003 .stack 100h
004 .data
005
006     dnsq8 db '          '
007     dnsq1 db ' '
008     dnsq2 db ' '
009     dnsq3 db ' '
010    dnsq4 db ' '
011    dnsq5 db ' '
012    dnsq6 db ' '
013    dnsq7 db ' '
014
015
016     opmsg1 db '1. Create new Account$'
017     opmsg2 db '2. Print Account Details$'
018     opmsg3 db '3. Withdraw Money $'
019     opmsg4 db '4. Deposit Money $'
020     opmsg5 db '5. Reset Account $'
021     opmsg6 db '6. Modify Account Details$'
022
023     opmsg8 db 'Press Enter To Return to Main Menu $'
024
025     insg db 'What Do You Want To Do ? : $'
026     inputCode db ?
027
028 ;Account details
029
030     accountName db 100 dup('$')
031     accountPIN db 100 dup('$')
032     accountPINcount dw 0 ;This keeps track how many d
033     totalAmount dw 0
034     inputAmountOption db ?
035
036 ;Option 1 (Create Account) Messages
037     op1nsq1 db '1. Enter Account Name: $'
038     op1nsq2 db '2. Enter Account Pin: $'
039     op1nsq3 db 'Successfully Created New Account ! $'
040
041 ;Option 2 (Print details) Messages
042     op2nsq1 db 'Account Name: $'
043     op2nsq2 db 'Currently Saved Account PIN: $'
044     op2nsq3 db 'No Accounts Currently Saved ! $'
045     op2nsq4 db 'Total Money Left: $'
046     op2nsq5 db 'You Have No Money !'
047
048 ;Option 4 (Money) Messages
049     op4nsq1 db '1. Rs 100$'
050     op4nsq2 db '2. Rs 500$'
051     op4nsq3 db '3. Rs 2000$'
052     op4nsq4 db '4. Deposit Money $'
053     op4nsq5 db 'Enter Code: $'
054     op4nsq6 db 'You Are Withdrawing Too MUCH !$'
055
056 ;Option 5 (Reset) Messages
057     op5nsq1 db 'Account Has been reset successfully$'
058
059 ;Option 6 (Modify Account) Messages

```

line: 54 col: 112 drag a file here to open

emulator: bank management system.exe...

file math debug view external virtual devices virtual drive help

Load step back stop step delay ms: 0

registers H L

AX 01 24

BX 00 00

CX 00 00

DX 02 E8

CS F400

IP 0200

SS 0710

SP 00EE

BP 0000

SI 0390

DI 0000

DS 0720

ES 0700

emulator screen (80x25 chars)

1. Create new Account
2. Print Account Details
3. Withdraw Money
4. Deposit Money
5. Reset Account
6. Modify Account Details
What Do You Want To Do ?: 2
Enter PIN: ****
Account Name: srishti
Currently saved Account PIN: 1234
Total Money Left: 4500
Press Enter To Return to Main Menu -

clear screen change font 8-16

original source code...

321 printString opmsg3

322 call etcop1

323 ret

324 op1 endp

325 :

326 :::::::::::::::::::::

327 ;:::::::::::::::::::

328 ;::::::::::: O P T I :::::::::::::

329 :::::::::::::::::::::

330 proc etcop2

331 call newline

332 printString opmsg8

333 etcopin:

334 op2 endp

335 int 21h

336 :::::::::::::::::::::

10. The final option left is the “reset account” option. When this option is selected, it asks for the pin for verification. After, verification is completed, the account related to that pin is erased from the system. Now, no account exists in our system and we have to create a new account again to perform the functionalities of our bank management system.

(Reset account option was developed by Deeksha)

The screenshot displays a Microsoft Windows environment with three main windows:

- Assembly Editor:** Shows the source code for "bank management system.asm". The code defines various messages (opnsg1 to opnsg8) and handles for account creation, printing details, withdrawing money, depositing money, resetting accounts, and modifying account details. It also includes a main loop and a procedure for stopping the program.
- Emulator Window:** Titled "emulator: bank management system.exe", it shows the CPU registers (AX, BX, CX, DX, SI, DI, DS, ES) and memory dump areas. A message box is open, asking for a PIN with the text "Enter PIN: ***".
- Terminal Window:** Titled "original source code", it shows the assembly code for the main loop and the stop procedure.

```

;edit D:\Documents\Desktop\WIT\3 fall sem 2021-22(microprocessor and interfacing)\Project\bank management system.asm
file edit bookmarks assembler emulator math ascii codes help
new open examples save compile emulate calculator converter options
:Project Title: Bank Management System
001 .model small
002 .stack 100h
003 .data
004 .data
005 .data
006 dnsq1 db '1. Create New Account$',0
007 dnsq2 db '2. Print Account Details$',0
008 dnsq3 db '3. Withdraw Money$',0
009 dnsq4 db '4. Deposit Money$',0
010 dnsq5 db '5. Reset Account$',0
011 dnsq6 db '6. Modify Account Details$',0
012 dnsq7 db '7. Exit Program$',0
013 dnsq8 db 'Press Enter To Return To Main Menu$',0
014
015
016 opnsg1 db '1. Create New Account$',0
017 opnsg2 db '2. Print Account Details$',0
018 opnsg3 db '3. Withdraw Money$',0
019 opnsg4 db '4. Deposit Money$',0
020 opnsg5 db '5. Reset Account$',0
021 opnsg6 db '6. Modify Account Details$',0
022
023 opnsg8 db 'Press Enter To Return To Main Menu$',0
024
025 insg db 'What Do You Want To Do ?: $'
026
027 inputCode db ?
028
029 ;Account details
030 accountName db 100 dup('$')
031 accountPIN db 100 dup('$')
032 accountPINcount dw 0 ;This keeps track how many digits are entered
033 totalAmount dw 0
034 inputAmount dw 0
035
036 ;Option 1 <Create Account> Messages
037 op1nsq1 db '1. Enter Account Name?:$',0
038 op1nsq2 db '2. Enter Account PIN?:$',0
039 op1nsq3 db 'Successfully Created New Account !$',0
040
041 ;Option 2 <Print details> Messages
042 op2nsq1 db 'Account Name:$',0
043 op2nsq2 db 'Currently Saved Account PIN:$',0
044 op2nsq3 db 'No Accounts Currently Saved !$',0
045 op2nsq4 db 'Total Money Left:$',0
046 op2nsq5 db 'You Have No Money !$',0
047
048 ;Option 3 <Withdraw> Messages
049 op3nsq1 db '1. Rs 100$',0
050 op3nsq2 db '2. Rs 500$',0
051 op3nsq3 db '3. Rs 2000$',0
052 op3nsq4 db '4. Exit Program$',0
053 op3nsq5 db 'Enter Code:$',0
054 op3nsq6 db 'You Are Withdrawing Too MUCH !$',0
055
056 ;Option 5 <Reset> Messages
057 op5nsq1 db 'Account Has been reset successfully$',0
058
059 ;Option 6 <Modify Account> Messages

```

The screenshot shows a Microsoft Windows desktop environment with three windows open:

- edit: D:\Documents\Desktop\VIT3 fall sem 2021-22\microprocessor and interfacing\Project\bank management system.asm**: An assembly code editor window displaying the source code for a bank management system. The code includes sections for creating accounts, printing account details, withdrawing money, depositing money, resetting accounts, and modifying account details. It also handles user input for PINs and menu selection.
- emulator: bank management system.exe**: A window titled "waiting for input" showing the emulator interface. It prompts the user to enter a PIN and displays a success message: "Account Has been reset successfully".
- original source code**: An assembly dump window showing the assembly code corresponding to the source code in the editor. It highlights specific instructions like "now ah,1", "int 21h", and "call clearScreen".

This concludes the implementation of our project. The functionality of our project can be used and accessed using the step-by-step method provided by us in this documentation.