Hwk #2 Scope CS3723 Fall 2018 Name: \_\_\_\_\_Long Trac\_\_\_\_\_\_\_\_\_\_\_\_\_ Section: 002

Please staple your pages together.

1.1. Symbol tables. Fill in the Symbol Table for each function.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| main   |  |  |  | | --- | --- | --- | |  | BA | Offset/Address | | m | 0 | 0 | | i | 0 | 4 | | c | 0 | 8 | | k | 0 | 12 | | e | 0 | 16 | | y | 0 | 20 | | subA | 0 | @A | | subD | 0 | @D | |  |  |  | | subA   |  |  |  | | --- | --- | --- | |  | BA | Offset/Address | | i | 0 | 0 | | x | 0 | 4 | | m | 1 | 0 | | c | 1 | 8 | | k | 1 | 12 | | e | 1 | 16 | | y | 1 | 20 | | subB | 0 | @B | |  |  |  | |
| subB   |  |  |  | | --- | --- | --- | | m | 0 | 0 | | c | 0 | 4 | | i | 1 | 0 | | k | 2 | 12 | | e | 2 | 16 | | y | 2 | 20 | | x | 1 | 4 | | subC | 0 | @C | |  |  |  | |  |  |  | | subC   |  |  |  | | --- | --- | --- | | k | 0 | 0 | | e | 0 | 4 | | m | 1 | 0 | | i | 2 | 0 | | c | 1 | 4 | | y | 3 | 20 | | x | 2 | 4 | | subB | 1 | @B | | subD | 3 | @D | |  |  |  | |
| subD   |  |  |  | | --- | --- | --- | | y | 0 | 0 | | m | 1 | 0 | | i | 1 | 4 | | c | 1 | 8 | | k | 1 | 12 | | e | 1 | 16 | |  |

1.2 Trace showing runtime memory stack for **STATIC** scope

(there may or may not be more rows in this answer sheet than you need.)

|  |
| --- |
| Func: main α Env Vector: α  m 100 160  i 101 161  c 102 162  k 103 163  e 104 114 124 184  y 105 |
| Func: subA β Env Vector: β α  i 201 221 231 251 266  x 5 10 15 |
| Func: subB θ Env Vector: θ β α  m 301 311  c 312 |
| Func: subC € Env Vector: € θ β α  k 403  e 404 |
| Func: subB ∑ Env Vector: ∑ β α  m 301 316  c 312 |
| Func: subC π Env Vector: π ∑ β α  k 403  e 404 |
| Func: subD φ Env Vector: φ α  y 605 |
| Func: Env Vector: |
| Func: Env Vector: |

1.3 Output for **STATIC** scope:

subD m=160 i=161 c=162 k=163 e=184 y=605

subC m=316 i=266 c=312 k=403 e=404 y=105

subB m=301 i=251 c=312 k=103 e=124 y=105

subC m=311 i=231 c=312 k=403 e=404 y=105

subB m=301 i=221 c=312 k=103 e=114 y=105

subA m=100 i=201 c=102 k=103 e=104 y=105

main m=100 i=101 c=102 k=103 e=104 y=105

2. 1 Trace showing runtime memory stack for **DYNAMIC** scope

(there may or may not be more rows in this answer sheet than you need.)

|  |
| --- |
| Func: main  m 100  i 101  c 102  k 103  e 104 114  y 105 |
| Func: subA  i 201 221 231 251 266 326  x 5 10 15 |
| Func: subB  m 301 311  c 312 |
| Func: subC  k 403  e 404 414 |
| Func: subB  m 301 316 376  c 312 372 |
| Func: subC  k 403 463  e 404 464 |
| Func: subD  y 605 |
| Func: |
| Func: |

2.2 Output for **DYNAMIC** scope:

subD m=376 i=326 c=372 k=463 e=464 y=605

subC m=316 i=266 c=312 k=403 e=404 y=105

subB m=301 i=251 c=312 k=403 e=414 y=105

subC m=311 i=231 c=312 k=403 e=404 y=105

subB m=301 i=221 c=312 k=103 e=114 y=105

subA m=100 i=201 c=102 k=103 e=104 y=105

main m=100 i=201 c=102 k=103 e=104 y=105