CS3723 Homework#2 Scope (28 pts) – due Thur Sept 27, 2018

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void **main**()

{

int m = 100;

int i = 101;

int c = 102;

int k = 103;

int e = 104;

int y = 105;

subA();

print("main", "m=", m, "i=", i, "c=", c, "k=", k, "e=", e, "y=", y);

void **subA**()

{

int i = 201;

int x = 5;

subB();

print("subA", "m=", m, "i=", i, "c=", c, "k=", k, "e=", e, "y=", y);

void **subB**()

{

int m = 301;

int c = 312;

i += 20;

x += 5;

e += 10;

subC();

print("subB", "m=", m, "i=", i, "c=", c, "k=", k, "e=", e, "y=", y);

void **subC**()

{

int k = 403;

int e = 404;

m += x;

i += x;

if (x < 12)

subB();

else

subD();

print("subC", "m=", m, "i=", i, "c=", c, "k=", k, "e=", e, "y=", y);

}

}

}

void **subD**()

{

int y = 605;

m += 60;

i += 60;

c += 60;

k += 60;

e += 60;

print("subD", "m=", m, "i=", i, "c=", c, "k=", k, "e=", e, "y=", y);

}

}

#1 Assume the C-like code uses **static scope** and **main** is initially called.

Solve each of the following:

1.1 Show the **symbol table** for each of the functions **Assume int is 4 bytes**. If a local declaration(s) was not included, add it to the table.

1.2 Trace the code **showing** the **runtime memory stack** including **environment vectors.**

It isn't necessary to show separate copies of the RTMS on each call; instead, just use one stack and show each activation record.

Use these symbols for the activation record addresses in this order: α β θ € ∑ π φ Δ Γ

1.3 **What is the output?**  Make certain you show the output in the correct order.

#2 Assume the C-like code uses **dynamic scope** and **main** is initially called.

Solve each of the following:

2.1 Trace the code using dynamic scope. Show the runtime memory stack (it isn't necessary to show separate copies of the RTMS on each call). Do not include an environment vector.

2.2 What is the output? Make certain you show the output in the **correct order**.