HW07 Problem Set

CS-3160

Assignment

HW07: Sebesta: Problem Set 10.(1,2,3,4,5)

HANDWRITTEN – Due at beginning of class on due date.

PROGRAM – Due at midnight, via Blackboard, at midnight on day prior to due date.

Handwritten Portion

1. Show the stack with all activation record instances, including static and dynamic chains, when execution reaches position 1 in the following skeletal program. Assume `Bigsub` is at level 1.

```
procedure Bigsub is
  procedure A is
  procedure B is
    begin  -- of B
    ... <---------- 1
    end; -- of B
  procedure C is
    begin  -- of C
    ...
    B;
    ...
    end; -- of C
  begin  -- of A
  ...
  C;
  ...
  end; -- of A
begin  -- of Bigsub
...
A;
...
end;  -- of Bigsub
```

2. Show the stack with all activation record instances, including static and dynamic chains, when execution reaches position 1 in the following skeletal program. Assume `Bigsub` is at level 1.

```
procedure Bigsub is
 MySum : Float;
 procedure A is
   X : Integer;
 procedure B(Sum : Float) is
   Y, Z : Float;
   begin -- of B
   ...
   C(Z)
   ...
   end; -- of B
 begin -- of A
 ...
 B(X);
 ...
 end; -- of A
procedure C(Plums : Float) is
 begin -- of C
 ...<-------------- 1
 end; -- of C
L : Float;
begin -- of Bigsub
...
A;
...
end;  -- of Bigsub
```

3. Show the stack with all activation record instances, including static and dynamic chains, when execution reaches position 1 in the following skeletal program. Assume `Bigsub` is at level 1.

```
procedure Bigsub is
 procedure A(Flag : Boolean) is
  procedure B is
   . . .
   A(false);
   end; -- of B
  begin -- of A
  if flag
   then B;
   else C;
  . . .
  end; -- of A
 procedure C is
  procedure D is
   . . . <-------------- 1
   end; -- of D
  . . .
  D;
  end; -- of C
begin -- of Bigsub
. . .
A(true);
. . .
 end;  -- of Bigsub
```

The calling sequence for this program for execution to reach `D` is

`Bigsub` calls `A`
`A` calls `B`
`B` calls `A`
`A` calls `C`
`C` calls `D`

4. Show the stack with all activation record instances, including the dynamic chain, when execution reaches position 1 in the following skeletal program. This program uses the deep-access method to implement dynamic scoping.

```
void fun1() {
  float a;
  . . .
}

void fun2() {
  int b, c;
  . . .
}
void fun3() {
  float d;
  . . . <---------- 1
}

void main() {
  char e, f, g;
  . . .
}
```

The calling sequence for this program for execution to reach `fun3` is

```
main calls fun2
fun2 calls fun1
fun1 calls fun1
fun1 calls fun3
```

5. Assume that the program of Problem 4 is implemented using the shallow-access method using a stack for each variable name. Show the stacks for the time of the execution of `fun3`, assuming execution found its way to that point through the sequence of calls shown in Problem 4.

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Programming Portion

NONE

Grading Rubric

The assignment is worth 25 pts (as a whole) and the score will be recorded as a percentage of that amount.

	Handwritten				
Problem	1	2	3	4	5
Points	5	5	5	5	5

10% Physical Format
50% Answers correct (and supported by work)
40% Effort evidenced by the submitted work