

CompSci 94
Extra Sample Exam 2 Questions
October 25, 2022

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Practice writing code on paper

- Write the code on paper, like you will do on the exam

Problem 1a Procedure (Rewritten Spring 18 Quest 11)

declare procedure **mystery**

with parameters: WholeNumber \Rightarrow num1 , WholeNumber \Rightarrow num2 , WholeNumber \Rightarrow num3

do in order

if $\{ \text{num1} \leq \text{num2} \}$ is true then

this say "number is 5" add detail

else

if $\{ \text{EITHER } \{ \text{num1} > \text{num3} \} \text{ OR } \{ \text{num1} > \text{num2} \} \}$ is true then

this say "number is 6" add detail

else

this say "number is 8" add detail

What happens when this code runs?

this.panda **mystery** num1: \Rightarrow 3 , num2: \Rightarrow 2 , num3: \Rightarrow 1

Problem 1b Procedure (Rewritten Spring 18 Quest 11)

```
declare procedure mystery  
with parameters: WholeNumber  $\Rightarrow$  num1 , WholeNumber  $\Rightarrow$  num2 , WholeNumber  $\Rightarrow$  num3  
do in order  
  if  $\{ \text{num1} \leq 2 \}$  is true then  
    this say "number is 5" add detail  
  else  
    if  $\{ \text{EITHER } \{ \text{num1} > \text{num3} \} \text{ OR } \{ \text{num1} > \text{num2} \} \}$  is true then  
      this say "number is 6" add detail  
    else  
      this say "number is 8" add detail
```

What happens when this code runs?

```
this.panda mystery num1: 6 , num2: 6 , num3: 8
```

Problem 1c Procedure (Rewritten Spring 18 Quest 11)

declare procedure **mystery**

with parameters: WholeNumber \Rightarrow num1 , WholeNumber \Rightarrow num2 , WholeNumber \Rightarrow num3

do in order

if $\{ \text{num1} \leq \text{num2} \}$ is true then

this say "number is 5" add detail

else

if $\{ \text{EITHER } \{ \text{num1} > \text{num3} \} \text{ OR } \{ \text{num1} > \text{num2} \} \}$ is true then

this say "number is 6" add detail

else

this say "number is 8" add detail

What happens when this code runs?

this.panda mystery num1: \Rightarrow 0 , num2: \Rightarrow 1 , num3: \Rightarrow 3

Problem 1d Procedure (Rewritten Spring 18 Quest 11)

```
declare procedure mystery  
with parameters: WholeNumber  $\Rightarrow$  num1 , WholeNumber  $\Rightarrow$  num2 , WholeNumber  $\Rightarrow$  num3  
do in order  
  if  $\{ \text{num1} \leq \text{num2} \}$  is true then  
    this say "number is 5" add detail  
  else  
    if  $\{ \text{EITHER } \{ \text{num1} > \text{num3} \} \text{ OR } \{ \text{num1} > \text{num2} \} \}$  is true then  
      this say "number is 6" add detail  
    else  
      this say "number is 8" add detail
```

What happens when this code runs?

```
this.panda mystery num1:  $\Rightarrow$ 7 , num2:  $\Rightarrow$ 9 , num3:  $\Rightarrow$ 3
```

Problem 2a (rewrite Fall 2018 Question 12)

declare procedure **mystery2**

with parameters:

DecimalNumber

value

DecimalNumber

amount

Add Parameter...

do in order

if EITHER value \geq 3.0 OR amount $<$ 1.0 is true then

if value $>$ amount is true then

this say "1" add detail

else

this say "2" add detail

else

if BOTH value $>$ 2.0 AND value $>$ amount is true then

this say "3" add detail

else

this say "4" add detail

What happens?

Panda says:

this.panda

mystery2

value: 1.5

, amount: 2.5

Problem 2b (rewrite Fall 2018 Question 12)

declare procedure **mystery2**

with parameters:

DecimalNumber

value

DecimalNumber

amount

Add Parameter...

do in order

if EITHER value \geq 3.0 OR amount $<$ 1.0 is true then

if value $>$ amount is true then

this say "1" add detail

else

this say "2" add detail

else

if BOTH value $>$ 2.0 AND value $>$ amount is true then

this say "3" add detail

else

this say "4" add detail

What happens?

Panda says:

this.panda mystery2 value: 2.5 , amount: 2.0

Problem 2c (rewrite Fall 2018 Question 12)

declare procedure **mystery2**

with parameters:

DecimalNumber

value

DecimalNumber

amount

Add Parameter...

do in order

if EITHER $\text{value} \geq 3.0$ OR $\text{amount} < 1.0$ is true then

if $\text{value} > \text{amount}$ is true then

this say "1" add detail

else

this say "2" add detail

else

if BOTH $\text{value} > 2.0$ AND $\text{value} > \text{amount}$ is true then

this say "3" add detail

else

this say "4" add detail

What happens?

Panda says:

this.panda mystery2 value: 2.0 , amount: 0.5

Problem 3a:

Write **Tortoise Procedure paintFriend**

- This procedure has **two parameters**
 - One parameter of type **Biped** named **friend**
 - One parameter of type **Paint** named **somePaint**The tortoise and friend turn to face each other. Then the tortoise moves stopping about 0.5 units in front of the friend. Then if the tortoise is taller than the friend, the friend is painted red. Otherwise the friend is painted the color of somePaint.

Write the procedure paintFriend



The image shows a snippet of code from a programming IDE. At the top, there is a dark purple header bar with a yellow hexagon icon on the left. Below the header, there are two tabs: "Scene" and "Tortoise". The "Tortoise" tab is active and contains the text "paintFriend ✕". Below the tabs, the code is displayed in a light blue background. The code starts with "declare procedure paintFriend with parameters:" followed by a list of parameters: "Biped", "friend", "Paint", and "somePaint". Each parameter is enclosed in a yellow box with a dotted pattern. To the right of the parameters is a button labeled "Add Paramete".

```
declare procedure paintFriend with parameters: Biped friend , Paint somePaint Add Paramete
```

3B) Calling tortoise paintFriend procedure

- Give the call for when the tortoise and pig are to turn and face each other, the tortoise moves over to about half a unit in front of the pig, and then if the tortoise is taller than the pig, then the pig is painted red, otherwise the pig is painted purple.

3C) Calling tortoise paintFriend procedure

- Give the call for when the tortoise and bunny are to turn and face each other, the tortoise moves over to about a half a unit in front of the bunny, and then if the tortoise is taller than the bunny, then the bunny is painted red, otherwise the bunny is painted blue.