Andrew Baca
CS 471
Program 2
September 5, 2018

Objective- This programming assignment is meant to test short circuit evaluation in ADA, the Borne Shell, PHP, and PERL. Short circuit evaluation exist in an AND or OR conditional statement. If the First argument of an AND condition is false, it should skip the second argument if short circuit evaluation exist. If the First argument of an OR condition is true, it should skip the sevond argument if short circuit evaluation exists

Results and Code-

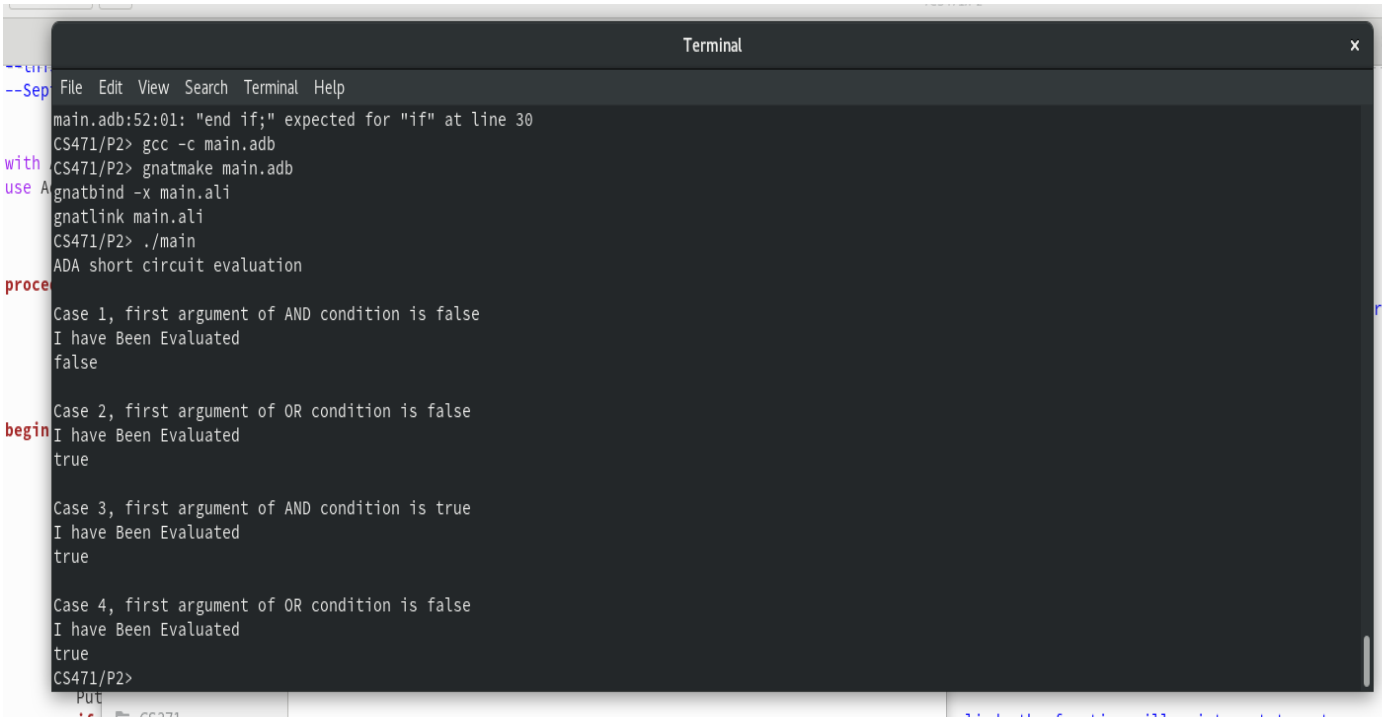
	ADA	**Borne Shell**	**PHP**	**PERL**
Does Short Circuit Evaluation Exist?	Not Directly. In ADA, it is important to note that short circuit evaluation does not directly work with AND and OR, however, if you use the AND THEN (__ and then __) or the OR THEN (__ or __) conditions, this will allow short circuit evaluation	Yes	Yes	Yes

ADA

sc3.php | sc4.pl | sc2.sh

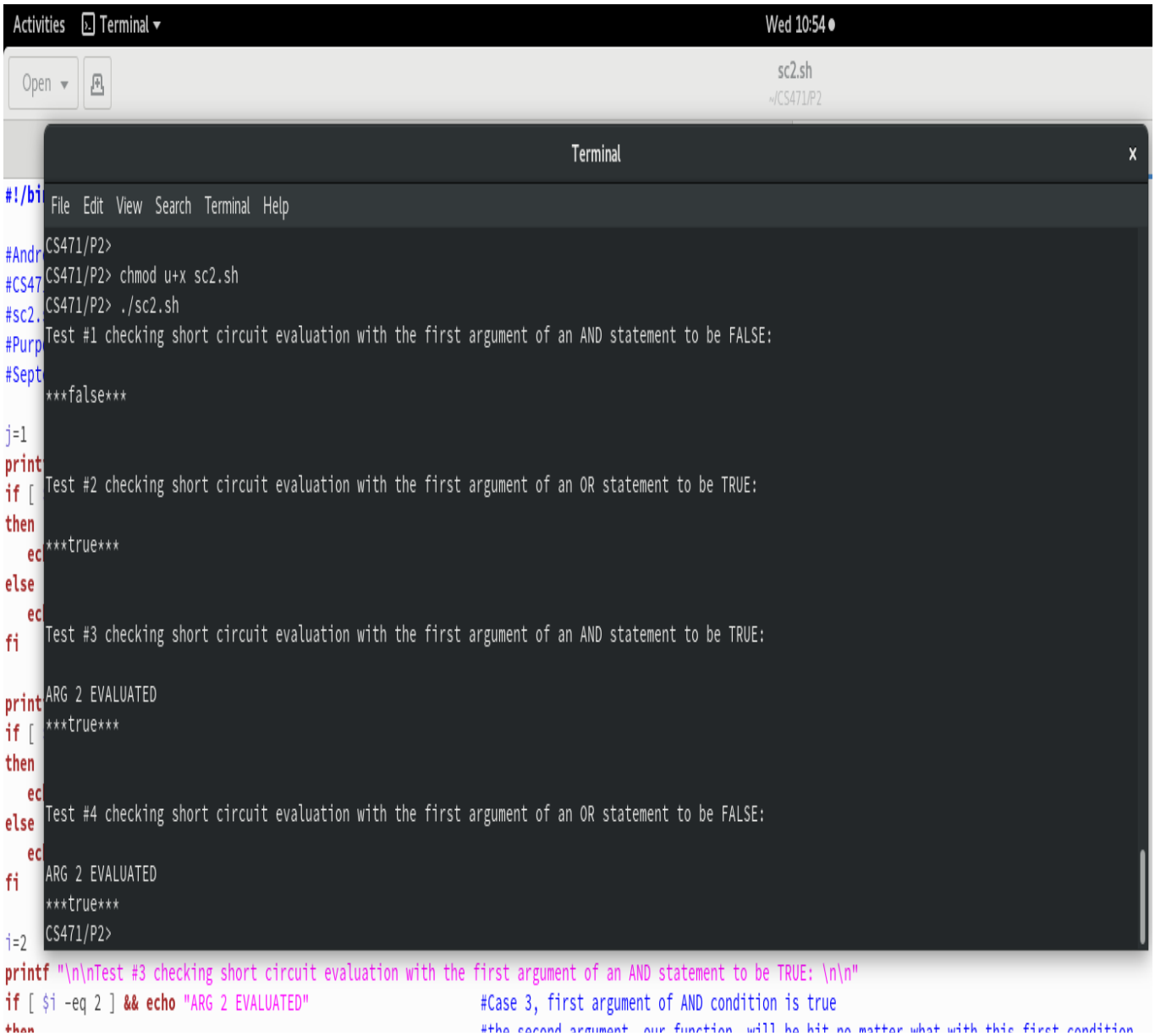
```
--this program will test short circuit evaluation in the ada programming language
--September 5, 2018


with Ada.Text_IO;
use Ada.Text_IO;



procedure main is
	function F return boolean is                        --This function will be placed in the second argument of the if statement to test short circuit evaluation
		begin                                       --note that we have to put user defined function inside main, and return a boolean type
		Put_Line("I have Been Evaluated");
		return true;
	end F;
begin
	Put_Line("ADA short circuit evaluation");           --case 1, first argument of AND condition is false
	Put_line("");
	Put_Line("Case 1, first argument of AND condition is false");   --if Short circuit evaluation is applied, the function will print a statement
	if (1 > 2 and F) then
		Put_Line("true");
	else
		Put_Line("false");
	end if;

	Put_line("");                                       --Case 2, first argument of OR condition is false
	Put_Line("Case 2, first argument of OR condition is false");
	if (1 < 2 or F) then                                --if Short circuit evaluation is applied, the function will print a statement
		Put_Line("true");
	else
		Put_Line("false");
	end if;

	Put_line("");                                               --Case 3, first argument of AND condition is true
	Put_Line("Case 3, first argument of AND condition is true");
	if ( 2 > 1 and F) then                                              --the second argument, our function, will be hit no matter what with this first condition
		Put_Line("true");
	else
		Put_line("false");
	end if;

	Put_line("");
	Put_Line("Case 4, first argument of OR condition is false");        --Case 4, first argument of OR condition is false
	if( 2 > 1 or F) then
		Put_Line("true");                                   --the second argument, our function, will be hit no matter what with this first condition
	else
		Put_line("false");
	end if;
end Main;
```

Ada ▾ Tab W

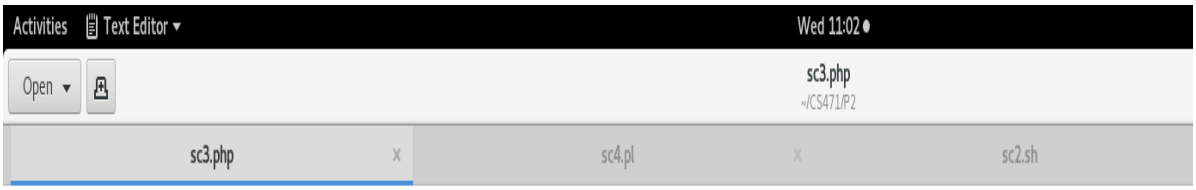

Terminal
File Edit View Search Terminal Help
main.adb:52:01: "end if;" expected for "if" at line 30
CS471/P2> gcc -c main.adb
CS471/P2> gnatmake main.adb
gnatbind -x main.ali
gnatlink main.ali
CS471/P2> ./main
ADA short circuit evaluation
Case 1, first argument of AND condition is false
I have Been Evaluated
false
Case 2, first argument of OR condition is false
I have Been Evaluated
true
Case 3, first argument of AND condition is true
I have Been Evaluated
true
Case 4, first argument of OR condition is false
I have Been Evaluated
true
CS471/P2>

Borne Shell

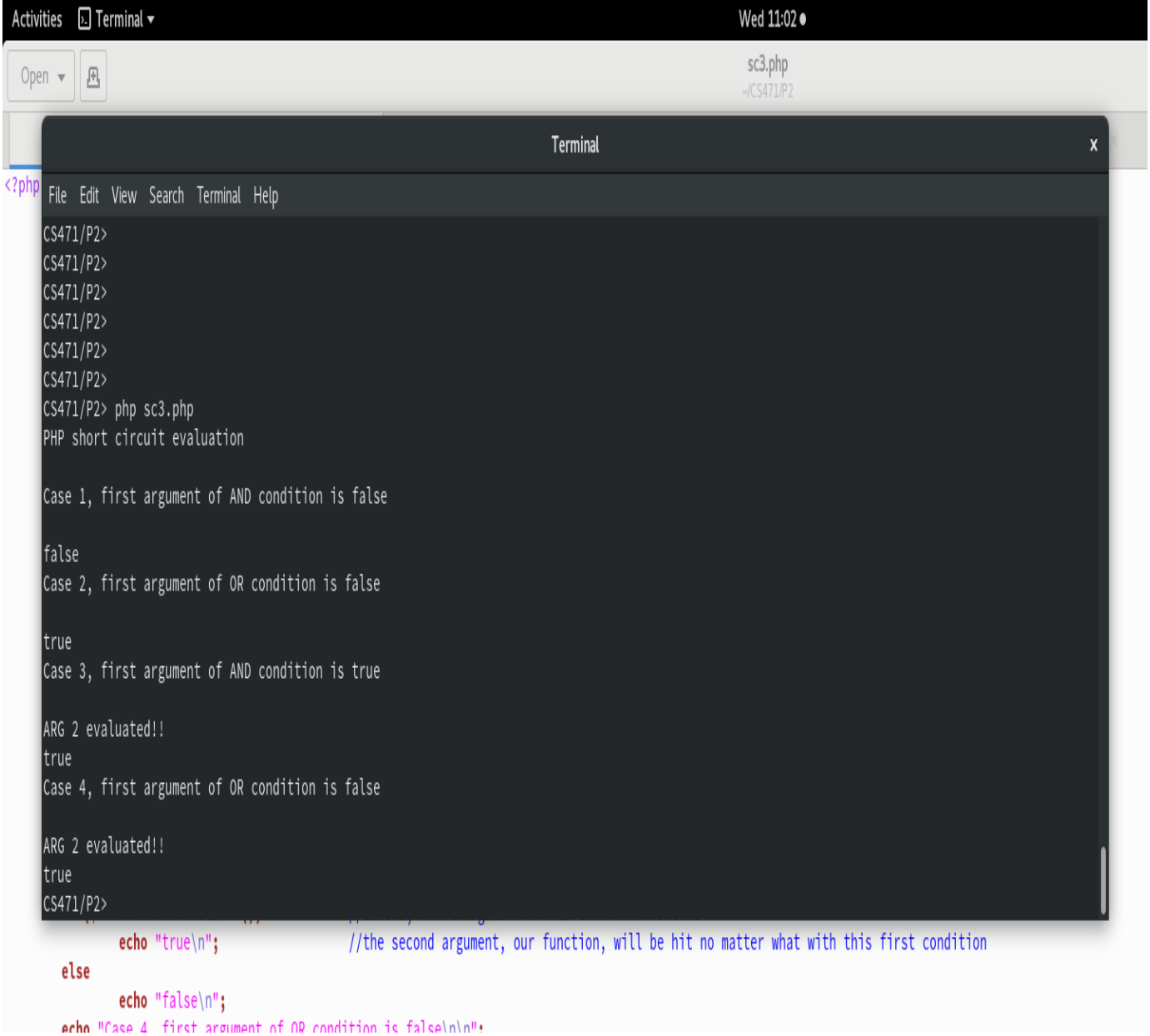

```
#!/bin/sh

#Andrew Baca
#CS471
#sc2.sh
#Purpose- this program will test short circuit evaluation in the borne shell
#September 5, 2018

j=1
printf "Test #1 checking short circuit evaluation with the first argument of an AND statement to be FALSE: \n\n"
if [ $j -ne 1 ] && echo "ARG 2 EVALUATED"                    #case 1, first argument of AND condition is false
then                                                         #if Short circuit evaluation is applied, the second arg will print a statement
   echo '***true***'
else
   echo '***false***'
fi

printf "\n\nTest #2 checking short circuit evaluation with the first argument of an OR statement to be TRUE: \n\n"
if [ $j -eq 1 ] || echo "ARG 2 EVALUATED"                    #Case 2, first argument of OR condition is false
then                                                         #if Short circuit evaluation is applied, the second arg will print a statement
   echo '***true***'
else
   echo '***false***'
fi

i=2
printf "\n\nTest #3 checking short circuit evaluation with the first argument of an AND statement to be TRUE: \n\n"
if [ $i -eq 2 ] && echo "ARG 2 EVALUATED"                    #Case 3, first argument of AND condition is true
then                                                         #the second argument, our function, will be hit no matter what with this first condition
   echo '***true***'
else
   echo '***false***'
fi

printf "\n\nTest #4 checking short circuit evaluation with the first argument of an OR statement to be FALSE: \n\n"
if [ $i -ne 2 ] || echo "ARG 2 EVALUATED"                    #Case 4, first argument of OR condition is false
then                                                         #the second argument, our function, will be hit no matter what with this first condition
   echo '***true***'
else
   echo '***false***'
fi
```


Activities
Terminal
Wed 10:54
Open
sc2.sh
~/CS471/P2
Terminal
File Edit View Search Terminal Help
CS471/P2>
CS471/P2> chmod u+x sc2.sh
CS471/P2> ./sc2.sh
Test #1 checking short circuit evaluation with the first argument of an AND statement to be FALSE:
false
Test #2 checking short circuit evaluation with the first argument of an OR statement to be TRUE:
true
Test #3 checking short circuit evaluation with the first argument of an AND statement to be TRUE:
ARG 2 EVALUATED
true
Test #4 checking short circuit evaluation with the first argument of an OR statement to be FALSE:
ARG 2 EVALUATED
true
CS471/P2>
printf "\n\nTest #3 checking short circuit evaluation with the first argument of an AND statement to be TRUE: \n\n"
if [$i -eq 2] && echo "ARG 2 EVALUATED" #Case 3, first argument of AND condition is true

PHP




```php
<?php
	//Andrew Baca
	//CS 471
	//sc3.php
	//purpose - this program will test scort circuit evaluation in the php programming language
	//September 5, 2018

	function evaluate(){		//This function will be placed in the second argument of the if statement to test short circuit evaluation
		echo "ARG 2 evaluated!!\n";
		return true;		//note that we are returning boolean value true
	}

	$num = 0;
	echo "PHP short circuit evaluation\n\n";
	echo "Case 1, first argument of AND condition is false\n";
	if ($num > 1  && evaluate())		//case 1, first argument of AND condition is false
		echo "true\n";			//if Short circuit evaluation is applied, the function will print a statement
	else
		echo "false\n";
	echo "Case 2, first argument of OR condition is false\n\n";
	if( $num == 0 || evaluate())		//Case 2, first argument of OR condition is false
		echo "true\n";			//if Short circuit evaluation is applied, the function will print a statement
	else
		echo "false\n";
	echo "Case 3, first argument of AND condition is true\n\n";
	if ($num < 1  && evaluate())		//Case 3, first argument of AND condition is true
		echo "true\n";			//the second argument, our function, will be hit no matter what with this first condition
	else
		echo "false\n";
	echo "Case 4, first argument of OR condition is false\n\n";
	if( $num != 0 || evaluate())		//Case 4, first argument of OR condition is false
		echo "true\n";			//the second argument, our function, will be hit no matter what with this first condition
	else
		echo "false\n";
?>
```


Activities
Terminal
Wed 11:02
Open
sc3.php
~/CS471/P2
Terminal
File Edit View Search Terminal Help
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2> php sc3.php
PHP short circuit evaluation
Case 1, first argument of AND condition is false
false
Case 2, first argument of OR condition is false
true
Case 3, first argument of AND condition is true
ARG 2 evaluated!!
true
Case 4, first argument of OR condition is false
ARG 2 evaluated!!
true
CS471/P2>
echo "true\n"; //the second argument, our function, will be hit no matter what with this first condition
else
echo "false\n";

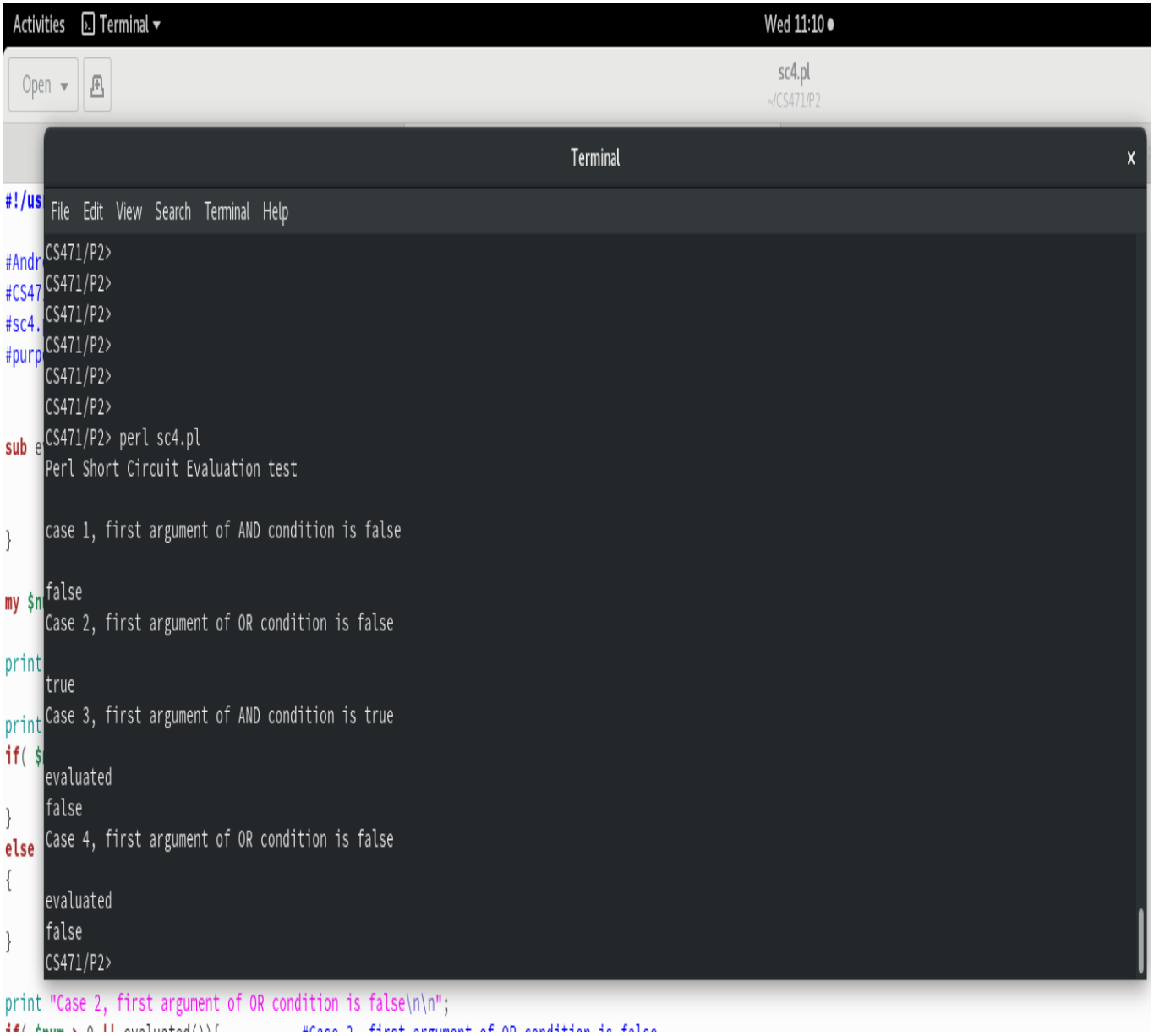
PERL

Activities Text Editor Wed 11:10

Open sc4.pl ~/CS471/P2

sc3.php | sc4.pl | sc2.sh

```
#!/usr/bin/perl

#Andrew Baca
#CS471
#sc4.pl
#purpose - this program will test short circuit evaluation in the perl programming language


sub evaluated{                          #This function will be placed in the second argument of the if statement to test short circuit evaluation
        print "evaluated\n";            #note that we need a  return, and the sub in front of the function
        return;
}

my $num = 1;

print "Perl Short Circuit Evaluation test\n\n";

print "case 1, first argument of AND condition is false\n\n";
if( $num < 0 && evaluated()){           #case 1, first argument of AND condition is false
        print "true\n";                 #if Short circuit evaluation is applied, the function will print a statement
}
else
{
        print "false\n";
}

print "Case 2, first argument of OR condition is false\n\n";
if( $num > 0 || evaluated()){           #Case 2, first argument of OR condition is false
        print "true\n";                 #if Short circuit evaluation is applied, the function will print a statement
}
else
{
        print "false\n";
}

print "Case 3, first argument of AND condition is true\n\n";
if( $num > 0 && evaluated()){           #Case 3, first argument of AND condition is true
        print "true\n";                 #the second argument, our function, will be hit no matter what with this first condition
}
else
{
        print "false\n";
}

print "Case 4, first argument of OR condition is false\n\n";
if( $num < 0 || evaluated()){           #Case 4, first argument of OR condition is false
        print "true\n";                 #the second argument, our function, will be hit no matter what with this first condition
}
else
{
```


Activities
Terminal
Wed 11:10
Open
sc4.pl
~/CS471/P2
Terminal
File Edit View Search Terminal Help
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2>
CS471/P2> perl sc4.pl
Perl Short Circuit Evaluation test
case 1, first argument of AND condition is false
false
Case 2, first argument of OR condition is false
true
Case 3, first argument of AND condition is true
evaluated
false
Case 4, first argument of OR condition is false
evaluated
false
CS471/P2>
print "Case 2, first argument of OR condition is false\n\n";