Question 1:

```
#!/bin/sh
#lastarg - prints out the last argument in the list

#creates a counter variable called i
i=1
#creates a variable numb_args that is equal to the number of arguments
numb_args=$#

#if no argument is provided (number of arguments is zero) return
nothing
if [ $# -eq 0 ]
        then
        :
#otherwise script returns the number of arguments and the last
argument
else
        echo the number of arguments $#
        echo "The last argument is:"

        #while loop to shift all the arguments so that the last
argument becomes the first
        while [ $i -lt $numb_args ]
        do
                #shifts the agruments
                shift

                #increments the value of the counter variable by 1
                i=`expr $i + 1`

        done


         #prints out the argument at location 1
        echo $1
fi
```

```
obelix.gaul.csd.uwo.ca[88]% lastarg
obelix.gaul.csd.uwo.ca[89]% lastarg a1 a2 a3 a4 a5
the number of arguments 5
The last argument is:
a5
obelix.gaul.csd.uwo.ca[90]% lastarg a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11
a12 a13
the number of arguments 13
The last argument is:
a13
obelix.gaul.csd.uwo.ca[91]% lastarg this is the last word
the number of arguments 5
The last argument is:
word

obelix.gaul.csd.uwo.ca[15]% lastarg
obelix.gaul.csd.uwo.ca[16]%
```

*If lastarg is placed in your home directory, what will happen if you execute the following command? Show the output and explain why you got this output. cd; lastarg .**

We are calling the **lastarg** shell script and passing all the files in the home directory that start with a . (dot). Thus the script reads (in lexicographical order) through all of the files that start with a dot and prints the last file name that starts with a dot. The last file that starts with a dot is named **.xsession-errors** and so the script prints this.

```
obelix.gaul.csd.uwo.ca[82]% cd; lastarg .*
the number of arguments 37
The last argument is:
.xsession-errors
```

Question 2:

```
#!/bin/sh
#odd_prn - echoes its shell script file name as well as its odd
arguments

#creates a variable numb_args that is equal to the number of arguments
numb_args=$#
#creates a counter variable called i
i=1

#prints its own file name to the screen
echo "This is the shell script file name: " $0

#if no argument is provided (number of arguments is zero) return
nothing
if [ $# -eq 0 ]
        then
        :
#otherwise script returns the number of arguments and the last
argument
else
        #echoes the number of arguments as well as the statement "Here
are the odd arguments"
        echo the number of arguments $#
        echo "Here are the odd arguments:"

        #prints the current argument at position $1 (this is the first
argument before we enter the loop)
        echo $1
#while loop to shift all the arguements so that odd arguments are
shifted to position $1

        while [ $i -lt $numb_args ]
        do
                #if the crrent number of arguments is greater than 2
then
                #shifts the agruments twice so that arguements at odd
positions will shift to postion $1
                if [ $# -gt 2 ]
                then
                        shift
                        shift
                        #prints the current argument at position $1
                        echo $1
```

```
                fi

                #increments the value of the counter variable by 1
                i=`expr $i + 1`

        done
fi
```

```
obelix.gaul.csd.uwo.ca[120]% odd_prn 1 2 3 4 5 6
This is the shell script file name:  odd_prn
the number of arguments 6
Here are the odd arguments:
1
3
5
obelix.gaul.csd.uwo.ca[121]% odd_prn
This is the shell script file name:  odd_prn
obelix.gaul.csd.uwo.ca[122]% odd_prn 1
This is the shell script file name:  odd_prn
the number of arguments 1
Here are the odd arguments:
1
obelix.gaul.csd.uwo.ca[123]% odd_prn a1 a2 a3 a4 a5 a6 a7 a8 a9 a10
a11 a12 a13
This is the shell script file name:  odd_prn
the number of arguments 13
Here are the odd arguments:
a1
a3
a5
a7
a9
a11
a13
obelix.gaul.csd.uwo.ca[124]% odd_prn to C or not to C that is the
question
This is the shell script file name:  odd_prn
the number of arguments 10
Here are the odd arguments:
to
or
to
that
the
```

If odd_prn is placed in your home directory, what will happen if you execute the following command? Show the output and explain why you got this output. cd; odd_prn .*

We are calling the **odd_prn** shell script and passing all the files in the home directory that start with a . (dot). Thus the script reads through all of the files that start with a dot (in lexicographical order) and prints the odd arguments.

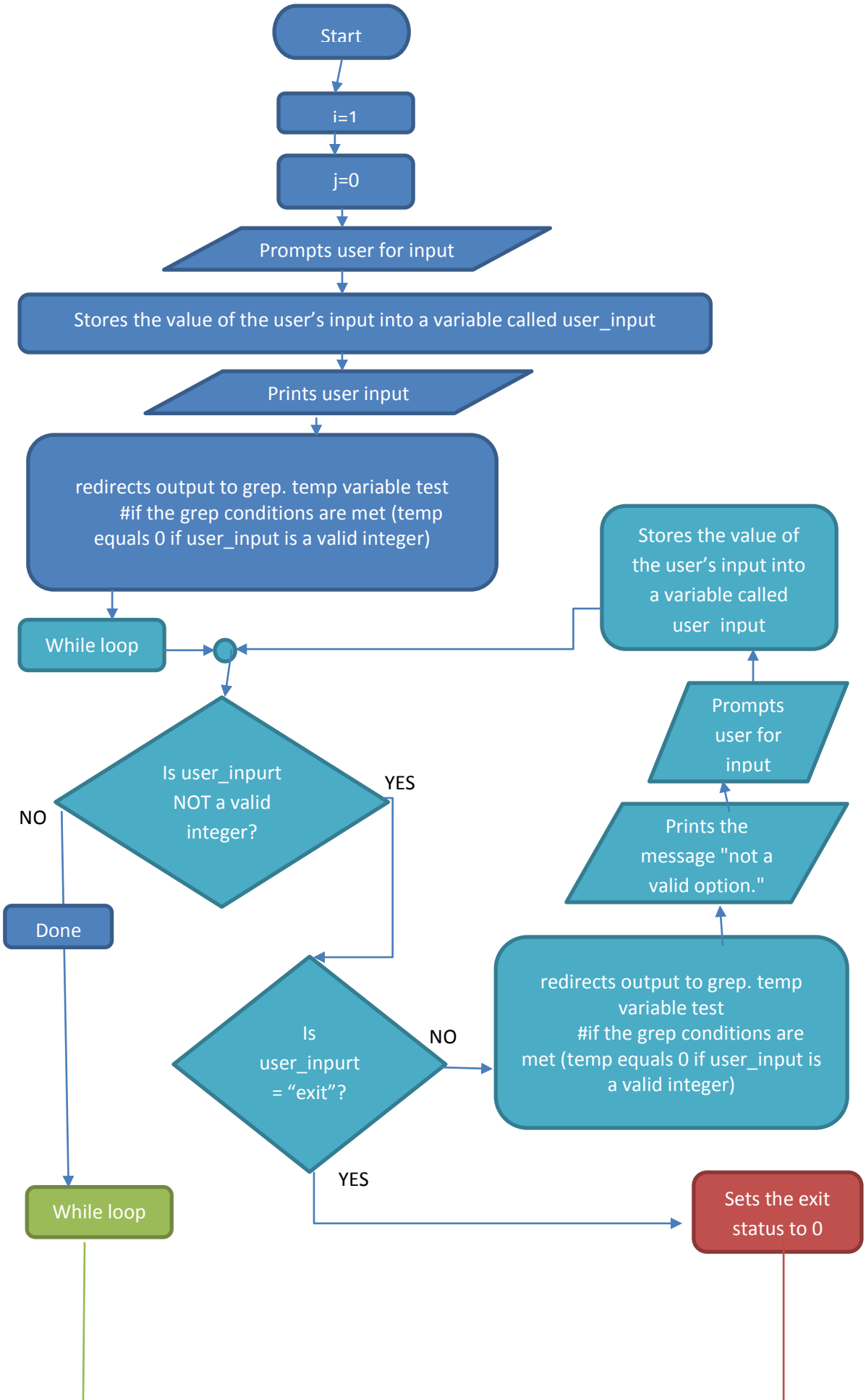
```
obelix.gaul.csd.uwo.ca[127]% cd; odd_prn .*
This is the shell script file name:  odd_prn
the number of arguments 37
Here are the odd arguments:
.
.ICEauthority
.Xauthority
.alias.rs6000
.alias.sun4m
.bash_history
.config
.dbus
.dmrc.15-09-24
.gconf
.gnome2
.history.sun4
.local
.mwmrc
.plan
.profile
.ssh
.twmrc
.xsession-errors
```

Question 3:

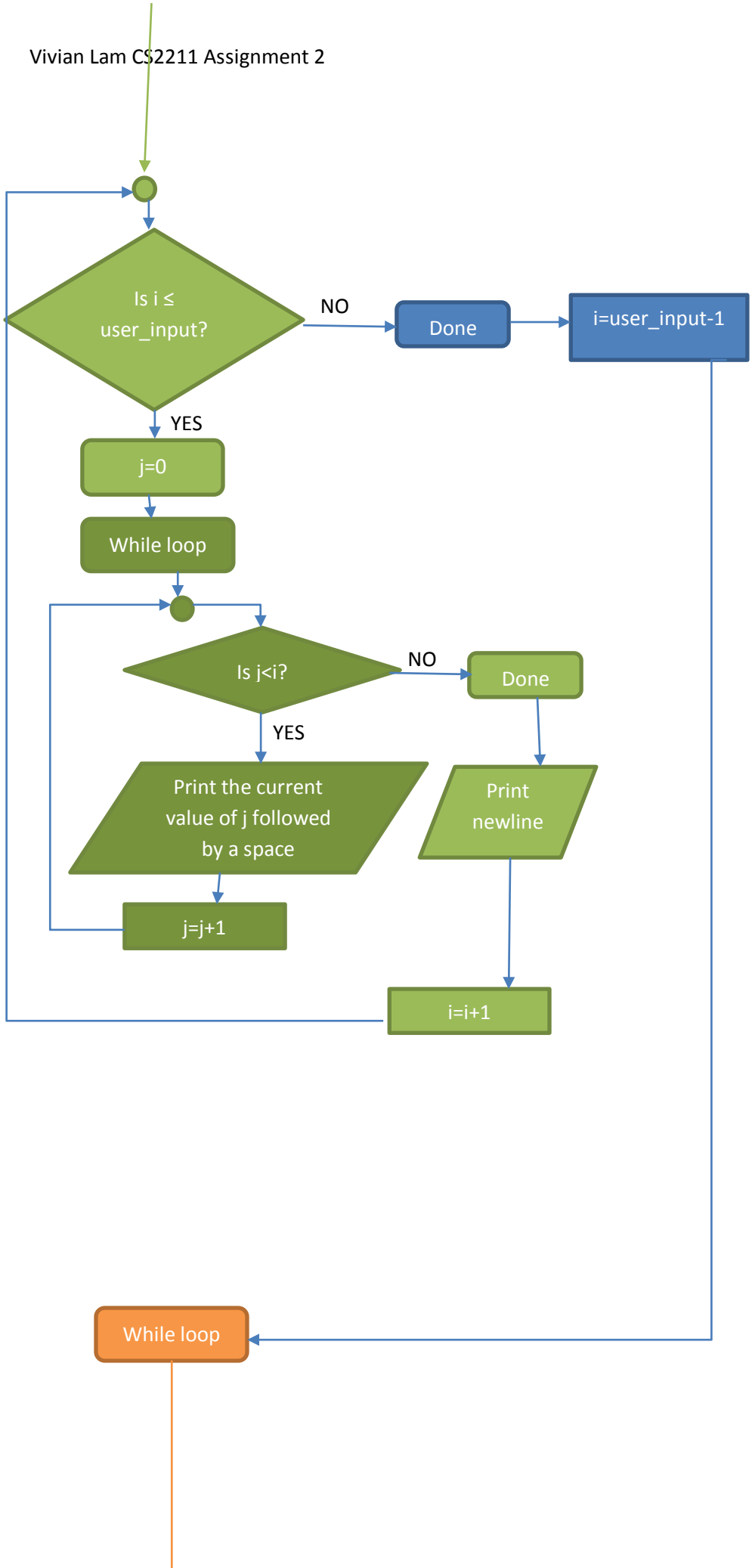
```
#!/bin/sh
#number pyramid - creates a sideways pyramid of numbers starting with
0 and incrementing to the number the user inputs, and then decrements
back to zero. If argument passed is not an integer

#initialize variables
i=0
j=0

#prompts user for input and stores in the variable user_input
echo "Please enter an integer, or type "'"exit"'" to quit: "
read user_input

#echoes back the user input and redirects output to grep. temp
variable test
        #if the grep conditions are met (temp equals 0 if user_input
is a valid integer)
echo "Your input is:"
echo "$user_input" | grep '^[0-9]*$'
temp=`echo "$?"`

#while the value the user inputs is not an integer it will loop and
prompt
        #the user again until the input is a proper integer
while [ $temp -ne 0 2> /dev/null ]
do
        #if the user inputs the word "exit" then the script's exist
status will
                        #become 0, terminating the script
        if [ $user_input = 'exit' ]
        then
                echo "exit"
                exit 0
        fi
        echo "not a valid option."
        #prompts user for input and stores in user_input
        echo "Please enter an integer, or type "'"exit"'" to quit: "
        read user_input


        #echoes back the user input and redirects output to grep. temp
variable test
                #if the grep conditions are met (temp equals 0 if
user_input is a valid integer)
        echo "Your input is: "
        echo $user_input | grep '^[0-9]*$'
        temp=`echo $?`

done
```

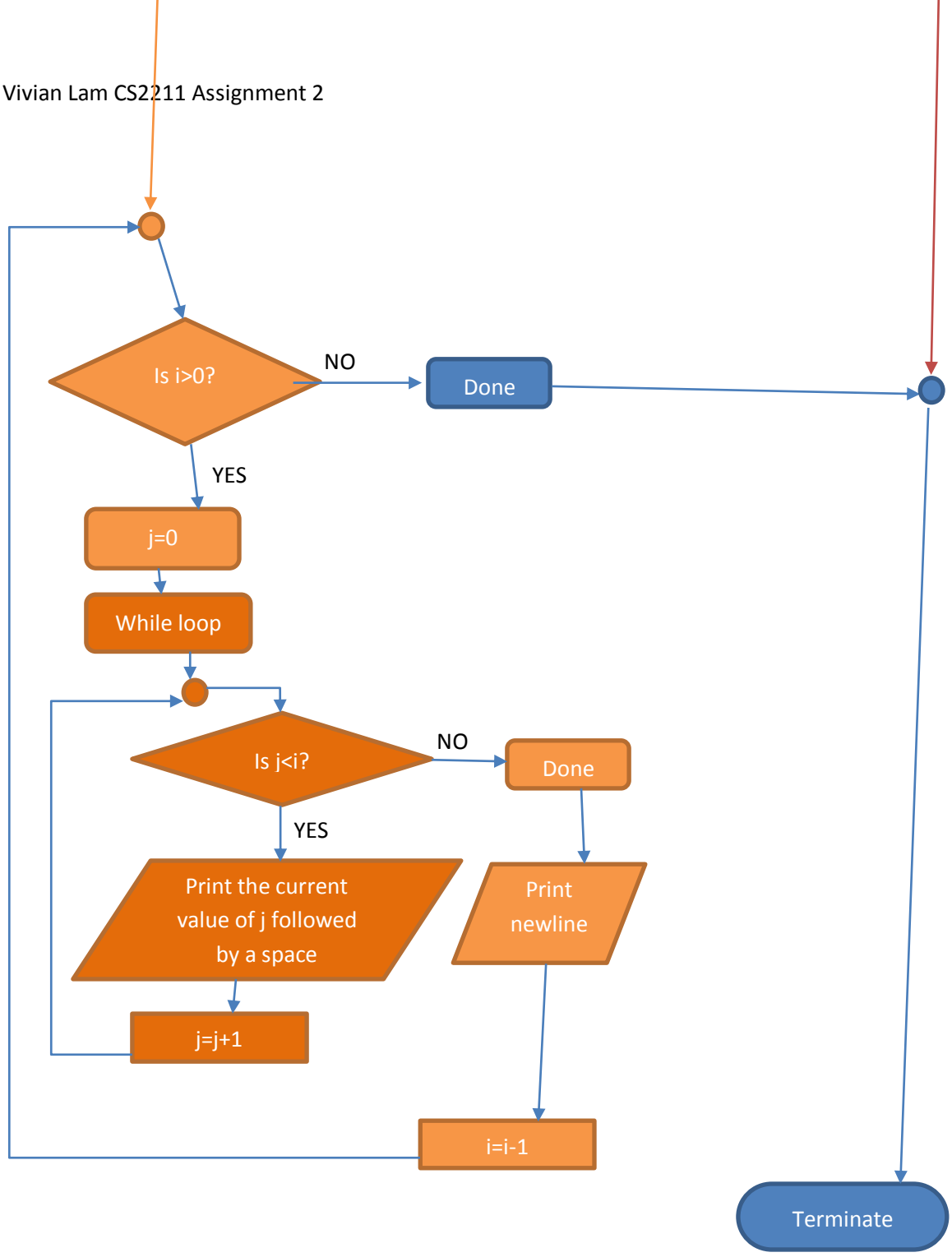
```
#nested loops to print half of the pyramid (incrementing from 0 to
user_input -1
#outer loop to iterate through rows
while [ $i -le $user_input ]
do
        #resets j to zero
        j=0
        #inner loop to iterate through columns within that row
        while [ $j -lt $i ]
        do
                #print the current value of j and then a space
                printf "$j "
                #increments j by 1
                j=`expr $j + 1`
        done
        #prints a new line
        printf "\n"
        #increments the current value of i by 1
        i=`expr $i + 1`
done

#sets the value of i to be user_input -2, which will be one less from
where the top half
        #of the pyramid ended
i=`expr $user_input - 1`

#nested loops to print the rest of the pyramid
while [ $i -gt 0 ]
do
        #resets j to zero
        j=0
        #inner loop to iterate through columns within that row
        while [ $j -lt $i ]
        do
                #print the current value of j and then a space
                printf "$j "
                #increments j by 1
                j=`expr $j + 1`
        done
        #echoes a new line
        printf "\n"
        #increments the current value of i by 1
        i=`expr $i - 1`
done
```

```
obelix.gaul.csd.uwo.ca[45]% number_pyramid
Please enter an integer, or type "exit" to quit:
wakemeupinside
Your input is:
not a valid option.
Please enter an integer, or type "exit" to quit:
-2
Your input is:
not a valid option.
Please enter an integer, or type "exit" to quit:
3.7
Your input is:
not a valid option.
Please enter an integer, or type "exit" to quit:
3dkjnk
Your input is:
not a valid option.
Please enter an integer, or type "exit" to quit:
3
Your input is:
3

0
0 1
0 1 2
0 1
0
obelix.gaul.csd.uwo.ca[46]% number_pyramid
Please enter an integer, or type "exit" to quit:
6
Your input is:
6

0
0 1
0 1 2
0 1 2 3
0 1 2 3 4
0 1 2 3 4 5
0 1 2 3 4
0 1 2 3
0 1 2
0 1
0

obelix.gaul.csd.uwo.ca[47]% number_pyramid
Please enter an integer, or type "exit" to quit:
exit
Your input is:
exit
obelix.gaul.csd.uwo.ca[48]%
```


Start
i=1
j=0
Prompts user for input
Stores the value of the user's input into a variable called user_input
Prints user input
redirects output to grep. temp variable test #if the grep conditions are met (temp equals 0 if user_input is a valid integer)
While loop
Stores the value of the user's input into a variable called user input
Prompts user for input
Prints the message "not a valid option."
Is user_inpurt NOT a valid integer?
YES
NO
Done
Is user_inpurt = "exit"?
NO
redirects output to grep. temp variable test #if the grep conditions are met (temp equals 0 if user_input is a valid integer)
YES
While loop
Sets the exit status to 0

Vivian Lam CS2211 Assignment 2




Is i>0?
NO
Done
YES
j=0
While loop
Is j<i?
NO
Done
YES
Print the current value of j followed by a space
Print newline
j=j+1
i=i-1
Terminate