Pseudo Code Practice Problems:

Listed below is a brief explanation of Pseudo code as well as a list of examples and solutions.

Pseudo code

Pseudo code can be broken down into five components.

- **Variables:**
- **Assignment:**
- **Input/output:**
- **Selection:**
- **Repetition:**

A variable has a name, a data type, and a value. There is a location in memory associated with each variable. A variable can be called anything or be given any name. It is considered good practice to use variable names that are relevant to the task at hand.

Assignment is the physical act of placing a value into a variable. Assignment can be shown using

set = 5
set = num + set

The left side is the variable a value is being stored in and the right side is where the variable is being accessed. When a variable is assigned a value, the old value is written over with the new value so the old value is gone. x = 5 does not mean that x is equal to 5; it means set the variable x to have the value 5. Give x the value 5, make x equal to 5.

Input / Output both deal with an outside source (can be a user or another program) receiving or giving information. An example would be assuming a fast food restaurant is a program. A driver (user) would submit their order for a burger and fries (input), they would then drive to the side window and pick up their ordered meal (output.)

- **Output – Write / display / print**
- **Input – Read / get / input**

Selection construct allows for a choice between performing an action and skipping it. It is our conditional statements. Selection statements are written as such:

```
if  conditional statement
        statement list
elseif condition
        statement list
        statement list
        statement list
elseif condition
        statement list
        statement list
        statement list
else
        statement list
        statement list
        statement list
```

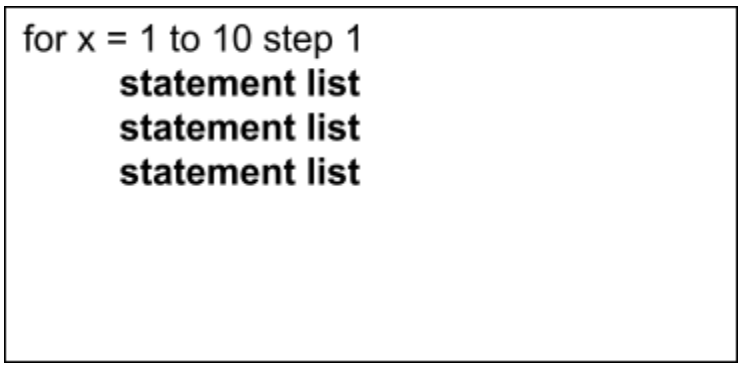
Repetition is a construct that allows instructions to be executed multiple times (i.e. repeated).

In a repetition problem

- Count is initialized
- Tested
- incremented

Repetition problems are shown as:

while condition
statement list
statement list
statement list



Examples:

Example 1: Write pseudo code that reads two numbers and multiplies them together and print out their product.

Pseudo Code:	Code:

get number1
get number2
product=number1*number2
display product
	let number1=+prompt("enter number 1");
	let number1=+prompt("enter number 2");
	let product=number1*number2;
	alert(product);

Example 2: Write pseudo code that will add up all even numbers starting at 2 and going up to n. DIsplay this sum.

Pseudo Code:	code:

get n
sum=0
for x=2 to n step 2
  sum=sum+x
print sum
	let n=+prompt("Enter end number");
	let sum=0;
	for(let x=2;x<=n;x+=2)
	{
	 sum+=x
	}
	alert("sum")

Exercises:

Exercise 3: Write pseudo code that performs the following: Ask a user to enter a number. If the number is between 0 and 10, write the word blue. If the number is between 10 and 20, write the word red. if the number is between 20 and 30, write the word green. If it is any other number, write that it is not a correct color option.

Pseudo Code:	code:

input num
if num< 10 and num>=0
  print "blue"
elseif num< 20 and num>=10
  print "red"
elseif num <30 and num>=20
  print "green"
else
  print "this is not a correct a correct color option"
	let num=+prompt("Enter a number for a color!!!!");
	if (num<10 && num>=0)
	{
	 alert("blue");
	}
	else if (num<20 && num>=10)
	{
	alert("red");
	}
	else if (num<30 && num>=20)
	{
	alert("green");
	}
	else
	{
	alert("this is not a correct a correct color option");
	}

Exercise 4: Write pseudo code to print all multiples of 5 between 1 and 100 (including both 1 and 100).

Pseudo Code:	code:

print 1
for i = 1 to 100 step 1
  remainder=i%5
  if remainder equal 0
  print i
	remainder = 0;
	console.log(1);
	for(let i = 1; i<=100; i++){
	  remainder=i%5;
	  if(remainder == 0){
	  console.log(i);
	  }
	}

Exercise 5: Write pseudo code that will count all the even numbers up to a user defined stopping point.

For example, say we want to see the first 5 even numbers starting from 0.
Well, we know that evens numbers are 0, 2, 4, etc.
The first 5 even numbers are 0, 2, 4, 6, 8.
The first 8 even numbers are 0, 2, 4, 6, 8 ,10 ,12, 16

Pseudo Code:	code:

count = 0
num = 0
get userReq
 	
while count is not equal to userReq
  output = output + num + ‘ ‘
  num=num+2
  count=count+1
print output
	let num = 0;
	let count = 0;
	let userReq = +prompt(‘How many even numbers do you want to see?’);
	let output = ‘’;
	
	while(count != userReq){
	  output=output+num+ ‘ ‘;
	  num+=2;
	  count++;
	}
	console.log(output);

Exercise 6: Write pseudo code that will perform the following.

a) Read in 5 separate numbers.
b) Calculate the average of the five numbers.
c) Find the smallest (minimum) and largest (maximum) of the five entered numbers.
d) Write out the results found from steps b and c with a message describing what they are.

Pseudo Code:	code:

number=0
smallest=0
sum=0
average=0
get number
smallest=number
largest=number
sum=sum+number
for x= 1 to 4 step 1
	let number=0;
	let smallest=0;
	let sum=0;
	let average=0;
	number=+prompt(“Enter the first number”);
	smallest=number;
	largest=number;
	sum+=number;
	for(let x=1;x<=4;x++)

```
  get number
  sum=sum+number
  if number>largest
    largest=number
  if number<smallest
    smallest=number


average=sum/5
print average
print smallest
print largest
```

```
{
  number=+prompt("Enter a new number");
  sum+=number;
   if(number>largest)
   {largest=number;}
   if(number<smallest)
   {smallest=number;}
}

average=sum/5;
alert(average);
alert(smallest);
alert(largest);
```

Exercise 7: Write pseudo code that reads in three numbers and writes them all in sorted order.

Pseudo Code:

```
get n1
get n2
get n3
if n1>n2 and n1>n3
  print n1
  if n2>n3
     print n2
     print n3
  else
    print n3
    print n2
else if n2>n1 and n2>n3
   print n2
   if n1>n3
     print n1
     print n3
  else
    print n3
    print n1
else
  print n3
  if n1>n2
     print n1
     print n2
  else
    print n2
    print n1
```

code:

```
let n1 = 0;
let n2 = 0;
let n3 = 0;

n1=+prompt("enter your first number");
n2=+prompt("enter your second number");
n3=+prompt("enter your third number");

if(n1>n2 && n1>n3)
{
  console.log(n1);
  if(n2>n3)
  {
    console.log(n2);
    console.log(n3);
  }
  else
  {
    console.log(n3);
    console.log(n2);
  }
}
else if(n2>n1 && n2>n3)
{
  console.log(n2);
  if(n1>n3)
  {
    console.log(n1);
    console.log(n3);
  }
  else
```

	{
	console.log(n3);
	console.log(n1);
	}
	}
	else
	{
	console.log(n3);
	if(n1>n2)
	{
	console.log(n1);
	console.log(n2);
	}
	else
	{
	console.log(n2);
	console.log(n1);
	}
	}

Exercise 8: Write pseudo code that will calculate a running sum. A user will enter numbers that will be added to the sum and when a negative number is encountered, stop adding numbers and write out the final result.

Pseudo Code:	code:

let sum=0
do
get number
if number >=0
sum+=num
while num>=0
print sum
	let sum=0;
	do {
	let num+=prompt("What number would you like to add? negative to stop");
	if (num>=0){
	sum+=num;
	}
	} while (num>=0)
	alert(sum);