**Iterative Exercise Solutions**

Problem#1

Create a flowchart and pseudo code that will generate the following number series:

10, 5, 9, 10, 8, 15, 7, 20, 6, and 25

Pseudocode

Variables used:  
 x, y are numeric

Begin:

Initialization/Preparation:  
 x = 10

y = 5

Process & Output:

while (x >= 6) do

begin

display x, y

x = x - 1

y = y + 5

end

End.

Flowchart:

**START**

x = 10

y = 5

**A**

**A**

True

False

**END**

x = x – 1

y = y + 5

Output x, y

if ( x >= 6)

Problem #2

Create a flowchart and pseudocode that will generate the following number series:  
 1, 2, 4, 7, 11, 16, 22, 29, 37, and 46

Pseudocode:  
 Variables used:

x, y are numeric

Begin:

Initialization/Preparation:  
 x = 1

y = 1

Process & Output:

while ( x <= 46) do

begin

display x

x = x + y

y = y + 1

end

End.

Flowchart:

**START**

x = 1

y =1

**A**

**A**

True

False

**END**

x = x + y

y = y + 1

Output x

if ( x <= 46)

Problem #3

Create a flowchart and pseudocode that will input five numbers and output how many of the numbers entered are odd or even.

Pseudocode:

Variables used:

num, odd, even are numeric

Begin:

Initialization/Preparation:

odd = 0

even = 0

ctr = 1

Process:

while (ctr <= 5) do

begin

accept num

if (num % 2 = = 0) then

even = even + 1

else

odd = odd + 1

ctr = ctr + 1

end

Output:

display “Odd:”, odd

display “Even:”, even

End.

Flowchart:

**START**

odd = 0

even = 0

ctr = 1

**A**

Input num

**C**

**B**

ctr = ctr + 1

7

if (num % 2 = = 0)

even = even + 1

True

False

**B**

odd = odd + 1

**C**

if (ctr <= 5)

7

True

**A**

False

Output odd, even

**END**

Problem #4

Create a flowchart and pseudocode that will input five numbers and output how many of the numbers entered that is divisible by 2, divisible by 3, and divisible by both 2 and 3 & not divisible by both 2 and 3.

Pseudocode:

Variable used:

num, divBy2, divBy3, divByboth, divByneither, ctr, are numeric.

Begin:

Initialization:

divBy2 = 0

divBy3 = 0

divByboth = 0

divByneither = 0

ctr = 1

Input & Process:

while (ctr <= 5) do

begin

accept num

if (num % 2 = = 0 && num % 3 = = 0) then

divByBoth = divByBoth + 1

else if (num % 2 = = 0) then

divBy2 = divBy2 + 1

else if (num % 3 = = 0) then

divBy3 = divBy3 + 1

else

divByNeither = divByNeither + 1

end

Output:

Display “Divisble by 2:”, divBy2

Display “Divisble by 3”, divBy3

Display "Divisible by both 2 and 3”, divByBoth

Display “Divisble by neither 2 or 3”, divByNeither

End.

Flowchart:

**START**

else if (num % 3 = = 0 )

divBy 2 = 0, divBy 3 = 0, divByBoth = 0, divByNeither = 0, ctr = 1

**A**

Input num

**C**

divBy3 = divBy3 + 1

True

False

**B**

11

if (num % 2 = = 0 && num % 3 = = 0)

divByBoth = divByBoth + 1

True

False

**B**

else if (num % 2 = = 0)

divBy2 = divBy2 + 1

True

False

**C**

**B**

11

divByNeither = divByNeither + 1

**END**

Output divBy2, divBy3, divByBoth, divByNeither

False

True

**A**

if (ctr <= 5)

**B**

ctr = ctr + 1

Problem #5

Create a flowchart and pseudocode that will input 6 scores for quizzes (0 – 100). Eliminate the lowest quiz and compute and output the average of the five remaining quizzes.

Pseudocode:

Variables used:

num, quizSum, quizAvg, quizLow, ctr are numeric.

Begin:

Initialization/Preparation:

quizSum = 0

ctr = 1

Input:

accept num

Process:

while (num <= 0 || num > 100) do

begin

display “Invalid input. Try again!”

accept num

end

quizLow = num

while (ctr <= 5) do

begin

accept num

while (num <= 0 || num > 100) do

begin

display “Invalid input. Try again!”

accept num

end

if (num <= quizLow) then

quizSum = quizSum + quizLow

quizLow = num

else

quizSum = quizSum + sum

ctr = ctr + 1

end

quizAvg = quizSum / 5

Output:

display “Combined quiz score average:”, quizAvg

End

Flowchart: