

## Running Total with Fixed Loop (For)

Pseudocode	Flowchart	Structured Diagram	Python Code
<ol style="list-style-type: none"> <li>1. Set total TO 0</li> <li>2. Fixed Loop – repeat 20 times</li> <li>3. Ask user for amountRaised</li> <li>4. total = total + amountRaised</li> <li>5. End Loop</li> <li>6. Print total to Display</li> </ol>	<pre> graph TD     Start([total = 0]) --&gt; Init([counter = 1])     Init --&gt; Get[/Get amount from pupil/]     Get --&gt; Add[total = total + amount]     Add --&gt; Inc[counter = counter + 1]     Inc --&gt; Dec{counter == 20}     Dec -- true --&gt; Display[/Display total/]     Dec -- false --&gt; Get     </pre>	<pre> graph TD     Problem[Problem: Running total] --&gt; Set[Set total to 0]     Problem --&gt; Repeat([Repeat 20 times])     Problem --&gt; Display[Display total]     Repeat --&gt; Get[Get amount from pupil]     Repeat --&gt; Add[total = total + amount]     </pre>	<pre> total = 0 for counter in range(0, 20):     amount = int(input("Enter amount raised"))     total = total + amount print(total)     </pre>

## Running Total with Conditional Loop (While)

Pseudocode	Flowchart	Structured Diagram	Python Code
<ol style="list-style-type: none"> <li>1. SET total TO 0</li> <li>2. SET NoOfPupils TO 0</li> <li>3. Conditional Loop - WHILE NoOfPupils &lt; 20</li> <li>4. Ask user for amountRaised</li> <li>5. total = total + amountRaised</li> <li>6. Add 1 to NoOfPupils</li> <li>7. End Loop</li> <li>8. Print total to Display</li> </ol>	<pre> graph TD     Start([total = 0]) --&gt; Init([Set NoOfPupils to 0])     Init --&gt; Get[/Get amount from pupil/]     Get --&gt; Add[total = total + amount]     Add --&gt; Inc[/NoOfPupils = NoOfPupils + 1/]     Inc --&gt; Dec{Repeat until NoOfPupils &gt;= 20}     Dec -- true --&gt; Display[/Display total/]     Dec -- false --&gt; Get     </pre>	<pre> graph TD     Problem[Problem: Running total] --&gt; Set[Set total to 0]     Problem --&gt; SetPupils[Set NoOfPupils to 0]     Problem --&gt; Repeat([Repeat until NoOfPupils &gt;= 20])     Problem --&gt; Display[Display total]     Repeat --&gt; Get[Get amount from pupil]     Repeat --&gt; Add[total = total + amount]     Repeat --&gt; IncPupils[NoOfPupils = NoOfPupils + 1]     </pre>	<pre> total = 0 noOfPupils = 0 while noOfPupils &lt; 20:     amount = int(input("Enter amount"))     total = total + amount     noOfPupils = noOfPupils + 1 print(total)     </pre>

## Standard Algorithms – Design to Implementation

### Input Validation

Pseudocode	Flowchart	Structured Diagram	Python Code
<ol style="list-style-type: none"> <li>1. Ask user to enter age</li> <li>2. Conditional Loop - WHILE age &lt; 0 OR age &gt; 120</li> <li>3. Display error message - Invalid</li> <li>4. Ask user to re-enter age</li> <li>5. End Loop</li> </ol>	<pre> graph TD     Start([Start]) --&gt; GetAge[/Get age from user/]     GetAge --&gt; Decision{age &lt; 0 or age &gt; 120}     Decision -- true --&gt; DisplayError[Display error message]     DisplayError --&gt; GetAge     Decision -- false --&gt; End([End])     </pre>	<pre> graph TD     Problem[Problem: input validation] --&gt; GetAge[Get age from user]     GetAge --&gt; Loop{While age &lt; 0 or age &gt; 120}     Loop --&gt; DisplayError[Display error message]     DisplayError --&gt; GetAge     </pre>	<pre> age = int(input("Enter your age: ")) while age &lt; 0 or age &gt; 120:     print("Invalid age - enter 0-99 only")     age = int(input("Enter your age: "))     </pre>

### Traversing a 1D Array

Pseudocode	Flowchart	Structured Diagram	Python Code
<ol style="list-style-type: none"> <li>1. SET names[] TO array of strings</li> <li>2. FOR loop = 1 to 5</li> <li>3. Ask user to enter name</li> <li>4. STORE name in array[]</li> <li>5. END LOOP</li> <li>6. FOR each item in the array</li> <li>7. SEND name TO DISPLAY</li> <li>8. END LOOP</li> </ol>	<pre> graph TD     Start([Start]) --&gt; SetNames[/names = [''] * 5/]     SetNames --&gt; Counter1[/counter = 1/]     Counter1 --&gt; GetPupil[/Get pupil name/]     GetPupil --&gt; AddPupil[Add pupil name to array]     AddPupil --&gt; CounterInc[counter = counter + 1]     CounterInc --&gt; CounterEq5{counter == 5}     CounterEq5 -- true --&gt; End1([End])     CounterEq5 -- false --&gt; GetPupil     End1 --&gt; DisplayPupil[/Display pupil name/]     DisplayPupil --&gt; CounterInc2[counter = counter + 1]     CounterInc2 --&gt; CounterEqLen{counter == length of array}     CounterEqLen -- true --&gt; End2([End])     CounterEqLen -- false --&gt; DisplayPupil     </pre>	<pre> graph TD     Problem[Problem: Traversing 1D Array] --&gt; SetNames[Set names to [''] * 5]     SetNames --&gt; Repeat5{Repeat 5 times}     Repeat5 --&gt; GetPupil[Get name from keyboard, store in array]     GetPupil --&gt; RepeatEach[Repeat for each item in array]     RepeatEach --&gt; DisplayPupil[Display name]     </pre>	<pre> names = [""]*5  for counter in range(0, 5):     names[counter] = input("Enter the pupil's name.")  for counter in range(0, len(names)):     print("Pupil name: " + names[counter])     </pre>