Programming Constructs – Sequence Statements

What is a Programming Construct

A Programming Construct is to control the order/flow in which instructions are executed.

What is a Programming Statement

In programming languages, the expression which translates to an instruction is called a programming statement or just statement.

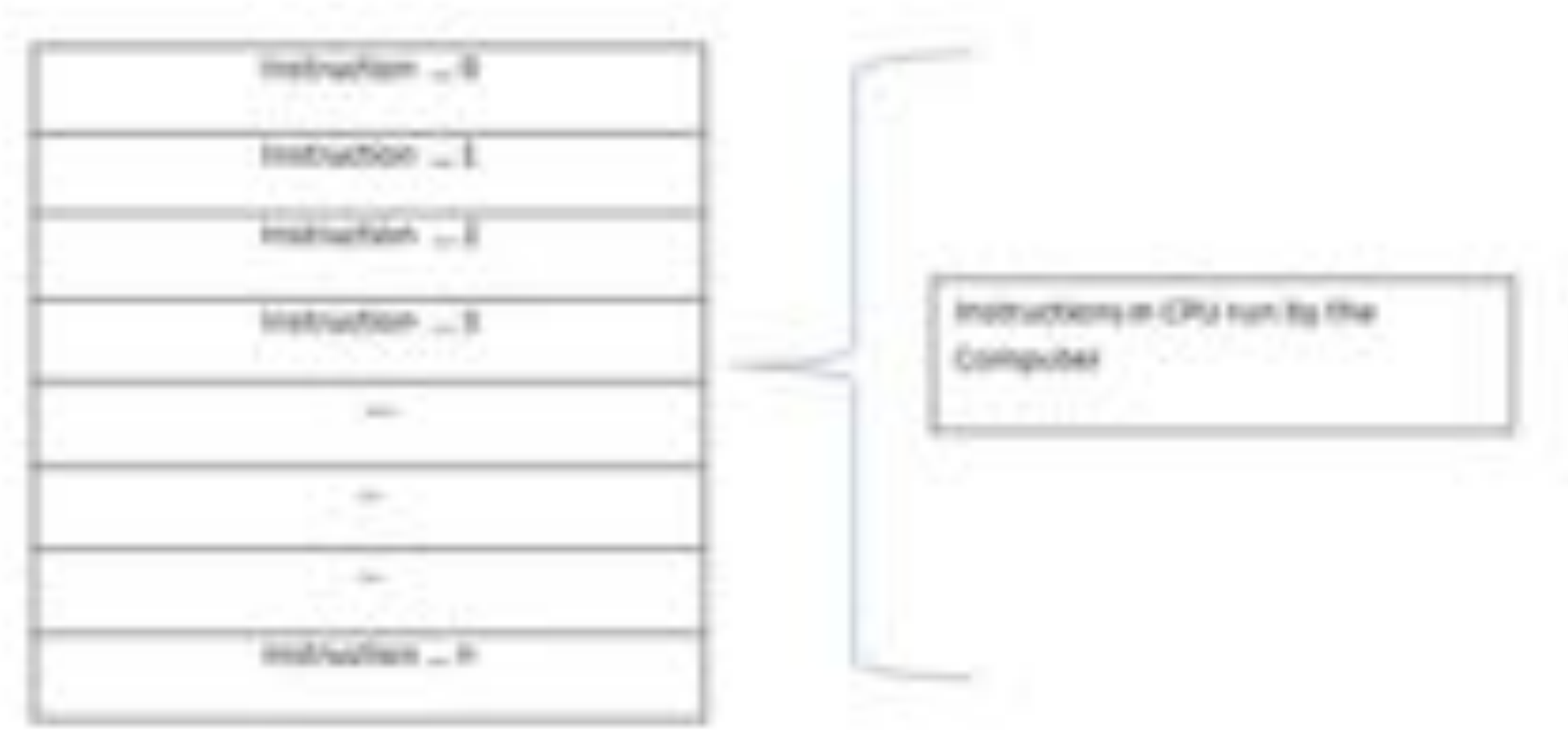
Programming Constructs Classification

1. Sequences
2. Selection
3. Repetition

1. Sequence Statement

A sequence construct tells the CPU (processor) which statement is to be executed next.

A Program is mainly set of Instructions



Demonstrating add.sh & Execution Thread

TerminalCommands — nano add.sh — 75×21

```
  GNU nano 2.0.6                File: add.sh

#!/bin/bash -x
x=100;
y=100;
z=$(( $x + $y ))
echo $z
```

add.sh program with following Instructions

1. **Variable $x Declaration and Assignment**
2. **Variable $y Declaration and Assignment**
3. **Addition of $x and $y and assigning to variable $z**
4. **Displaying $z**
5. **NOTE : Arithmetic Expression *$((expression))***

TerminalCommands — -bash — 75×21

```
Narayans-MacBook-Pro:TerminalCommands narayan$ nano add.sh
Narayans-MacBook-Pro:TerminalCommands narayan$ ./add.sh
+ x=100
+ y=100
+ z=200
+ echo 200
200
Narayans-MacBook-Pro:TerminalCommands narayan$
```

Terminal showing 4 execution steps indicated by “+”

1. **Space allocated in RAM for $x**
2. **Space allocated in RAM for $y**
3. **CPU fetches value of $x and $y from memory. Adds $x + $y and stores the value in $z**
4. **Display the value of $z**

Sequences Practice Problems

1. Use Random Function ***((RANDOM))*** to get Single Digit
2. Use Random to get Dice Number between 1 to 6
3. Add two Random Dice Number and Print the Result
4. Write a program that reads 5 Random 2 Digit values , then find their sum and the average
5. Unit Conversion
   a. 1ft = 12 in then 42 in = ? ft
   b. Rectangular Plot of 60 feet x 40 feet in meters
   c. Calculate area of 25 such plots in acres

Sequences Practice Problems

- Write a program that takes a date as input and prints the day of the week that date falls on. Your program should take three command-line arguments: m (month), d (day), and y (year). For m use 1 for January, 2 for February, and so forth. For output print 0 for Sunday, 1 for Monday, 2 for Tuesday, and so forth. Use the following formulas, for the Gregorian calendar (where / denotes integer division):
- $y_0 = y - (14 - m) / 12$
- $x = y_0 + y_0/4 - y_0/100 + y_0/400$
- $m_0 = m + 12 \times ((14 - m) / 12) - 2$
- $d_0 = (d + x + 31m_0 / 12) \bmod 7$

Thank You