Program Development Cycle

1. Understand the problem
2. Plan the logic (represent the logic \(\rightarrow\) flowchart or pseudocode)
3. Code the program (a programming language)
4. Use software (compiler or interpreter) to translate the program into machine language
5. Test the program
6. Put the program into production
7. Maintain the program

Problem: Input a radius of circle. Calculate and display the area.

Input \(\rightarrow\) processing \(\rightarrow\) output

Output: display area of a circle
Input: radius
processing: area = radius x radius x 3.1416

Pseudocode

```
start
output "Enter a radius:"
input radius
area = radius x radius x 3.1416
output "AREA = " + area
end
```
Raptor flowchart

Start

"Enter a radius:"
GET radius

area ← radius * radius * 3.1416

PUT "AREA = " + area

End

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Lab Assignment 1
Name: Phuong Nguyen
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No magic numbers

Read a magic number, you don’t know what it is.

Example:

\[ \text{cost} = \text{area} \times 3.0 \]

What is 3.0? 3.0 is a magic number

Example:
3.1416 is a magic number. A magic number is usually constant. Represent a magic number with a variable. All characters in the variable are uppercase.

**Pseudocode**

```plaintext```
start
output “Enter a radius:”
input radius
PIE = 3.1416
area = radius x radius x PIE
output “AREA = “ + area
end
```

**Raptor Flowchart**
"Enter a radius."
GET radius

PIE ← 3.1416

area ← radius * radius * PIE

PUT "AREA = " + area
In Raptor, PI is represented 3.1416. You can use PI for 3.1416

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