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Java Programming for High School

Subject: Java Programming	Unit: Methods and Functions
Grade: 9 - 12	Lesson: **5 days**

Learning Target/Objective(s) (SWBAT or "I can…")
- I can write in pseudocode and
- I can write a complete a java "snippet" for at least 2 functions or method
- I can explain why functions are abstractions.

Guaranteed Outcomes:
-

Standard(s)
-

Prior Knowledge:
- Ideas about function input/ output, domain/range from Algebra I or II
- Abstraction in CS context
- Reusability in CS and common language context
- built in functions in Java - Built-in functions; Parameters (arguments), Abstraction, Random(),

Do Now (Bell-Ringer): (3 -5 minutes)
Think about your favorite meal. What are the most common actions we do or use when cooking something?
Turn and Talk Protocol: List 5 distinct/discrete procedures when cooking something that needs water.

Direct Instruction: (Teacher as Fountainhead!) (5-10 minutes)
Teacher can explain to students that methods are much like a recipe book. They will create such examples, building off the cooking concept used at the beginning of class.
They will demonstrate the examples below to students, explaining how each of these can be considered as functions.

1. cook italian food(**pasta,liquid**) parameters = information you need arguments = information you're putting in
2. boil() // boil method / function may be used for any boiling process
3. boil(**pasta)** // returns cooked pasta but ..
4. strain(**pasta, water**) // strain method / function may be used for any straining process
5. strain(**pasta)** //returns pasta

If we want to use the function to cook Italian food, all we have to just is **invoke** it, or call it
call function

Commented [1]: # Assignment:
- As a crew, create a lesson plan for a concept covered in the pre-work or the first programming course in this program (not data structures).

- This should be a lesson plan for your appropriate grade level (rooms have been).

- You need **not** create supplemental materials like sample code, assignments, etc.

- This is, at least partly, an exercise in collaborative planning. There are a number of different teaching styles amongst you all, and experience with various tools. Focus on having productive conversations and be open to tools & methods that you may not use.

- Use whatever file format that is more convenient for you, but name the file **`01_lesson`** (with the appropriate file extension) and put it in your **`methods`** folder.

- For reference, here are the topics
* Recursion
* Conditionals
* Methods
* Loops
* Methods/Decomposition/Algorithms
* Early java
* Strings
* Data types / variables

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cook italian food(***LINGUINI, WATER***) ← argument

USER-DEFINED FUNCTIONS
public static VOID nameOfFunction(parameters)
*parameters also called **arguments***

Recall the functions that we have already used earlier this year in the java library:

- indexOf()
- charAt()
- substring()... built in functions

T: Model a basic function in pseudocode and java code
(type basic function here….)

- public static void hello(String name):
  - sout("Hello " + name + "!");
- public static void main(String[] args)
  - hello("Sam");
- What does (name of function) do?
  - What is the purpose of the code?

T: Model an intermediate function in java code
(type code snippet here….)

Guided and Independent Practice: (20-30 minutes)

** students will work in pairs (Driver / Navigator) - pairs programming protocol.
** Teacher will provide a basic fill-in template for students to start.

1. Write a pseudocode that prints the happy birthday song with the user's name

2. Write pseudocode for wrapping a birthday or Christmas present (this seems more like a regular algorithm)
3. Have students watch you do it, write it down in their own words and at least three methods to simplify this task

4. Write pseudocode to give directions to go to the 4th floor, room 420 from building entrance and use functions/methods to go up, turn left, turn right, compare room numbers,

Closing: (5 minutes / whole class discussion / show-and-tell)

- Students will show/demo pseudocode (gallery walk protocol or quiz/quiz/change protocol).
- Students will demo to class a working java "snippet" for at least 2 functions or method and Class will debrief
- Students will explain why functions are abstractions.

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Assessment(s):
- ☐ Exit Ticket at the end of class
- ☐ Quiz either at end of the week or halfway through the unit

Materials	Bloom's Taxonomy	Types of Learning
• Chromebooks or laptops • Method fill-in templates • Pen or pencil • Paper	[X] Knowledge [X] Understanding [x] Application [X] Create/Evaluate/Analyze	[X] Co-op Learning [ ] Independent Work [X] Small Groups [x] Whole Group [X] Hands On

Accomodations	Remediation	Enrichment

Reflection: (How do I know)
- ☐ What data guided this lesson?
- ☐ Were the objectives understood?
- ☐ How are students responding to my instruction?
- ☐ Who is doing the heavy lifting? How heavy?
- ☐ When did I provide time for interaction?
- ☐ How useful was my feedback?
- ☐ Did I keep the lesson aligned?

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Additional Notes