

COSC 442:
Mobile Educational Game
Development

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Easy Exam Question

- In the following statement, what is the name of the variable?

```
String playerName = "Terry Jones";
```

Harder Exam Question

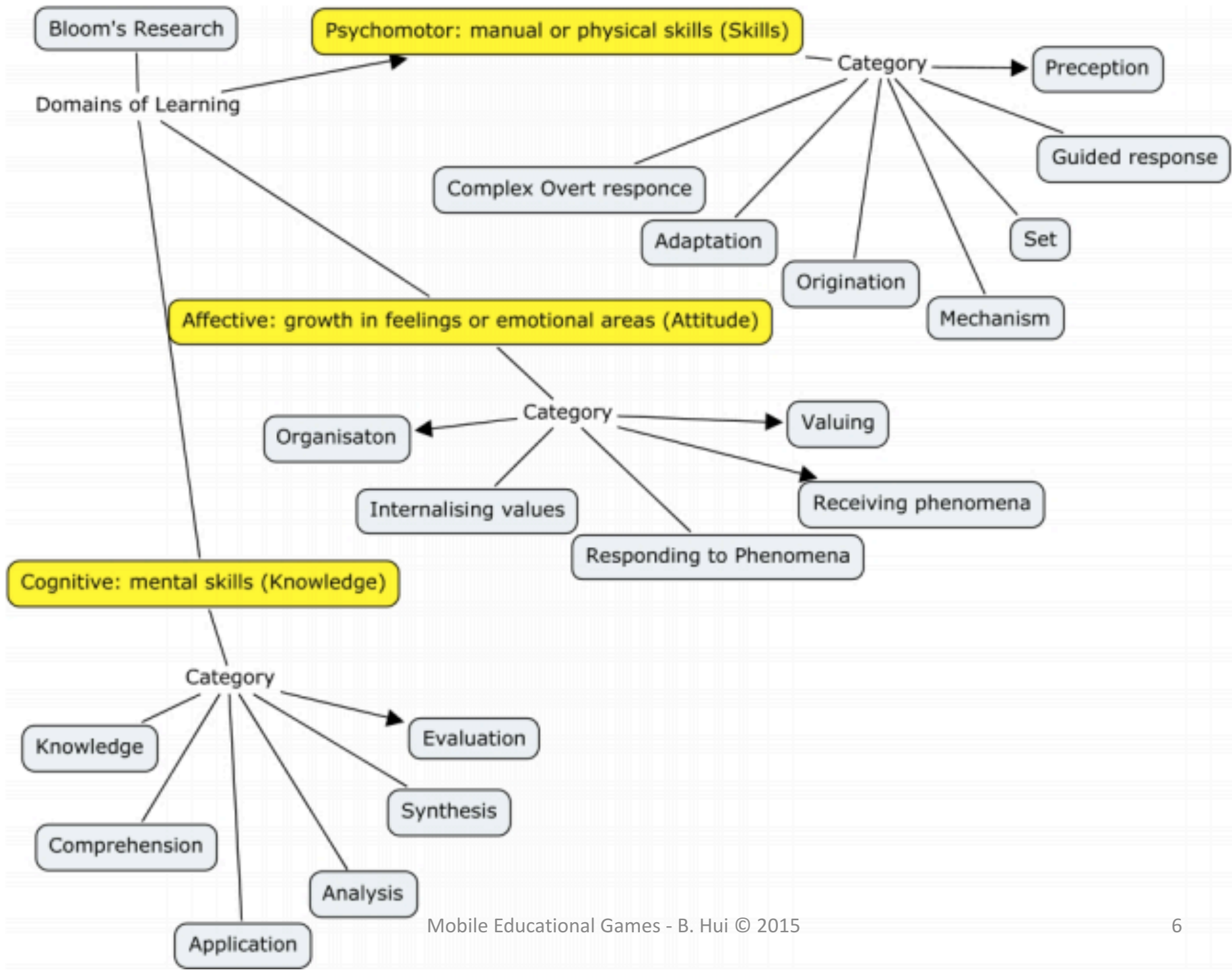
- Create a variable with the name “airplane” and instantiate it as the String value “ultralight”.

Even Harder Exam Question

- Come up with an exam question to test someone's knowledge on variables.

Bloom's Taxonomy (1956)

- Bloom developed a taxonomy of educational learning objectives
- Widely adopted as a tool to structure and understand our learning process
- Learning fit into one of following domains:
 - **Cognitive** – info processing, mental skills
 - **Affective** – attitudes and feelings
 - **Psychomotor** – physical skills



The Cognitive Domain

- Ranges from lower order thinking skills to higher order thinking skills
 - Knowledge
 - Comprehension
 - Application
 - Analysis
 - Synthesis
 - Evaluation
- Each is a prerequisite to the next level

Bloom's Revised Taxonomy (2001)

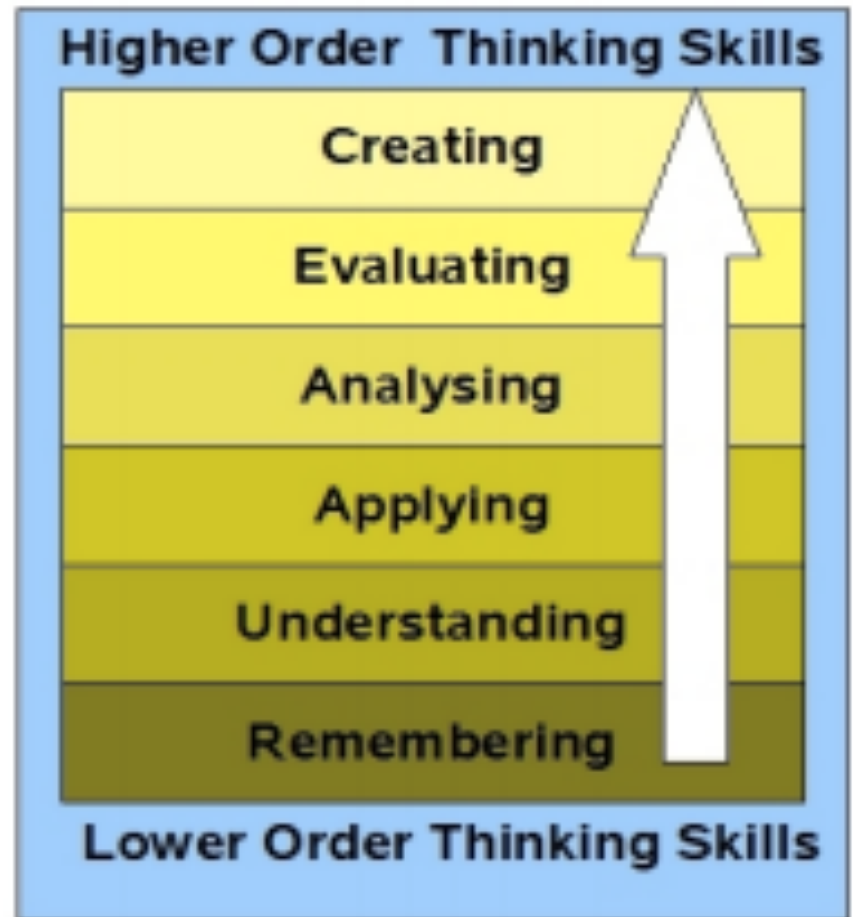
- Usage of verbs rather than nouns
- Rearrangement of the last two processes
 - Remembering
 - Understanding
 - Applying
 - Analyzing
 - Evaluating
 - Creating

A Comparison

Original



Revised



Examples

- Remembering
 - Recognizing
 - Listing
 - Describing
 - Identifying
 - Retrieving
 - Naming
 - Locating
 - Finding



Examples

- Understanding
 - Interpreting
 - Summarizing
 - Inferring
 - Paraphrasing
 - Classifying
 - Comparing
 - Explaining
 - Exemplifying



Examples

- Applying
 - Implementing
 - Carrying out
 - Using
 - Executing



Examples

- Analyzing
 - Comparing
 - Organizing
 - Deconstructing
 - Attributing
 - Outlining
 - Finding
 - Structuring
 - Integrating



Examples

- Evaluating
 - Checking
 - Hypothesizing
 - Critiquing
 - Experimenting
 - Judging
 - Testing
 - Detecting
 - Monitoring



Examples

- Creating
 - Designing
 - Constructing
 - Planning
 - Producing
 - Inventing
 - Devising
 - Making
 - Predicting



As a Learning Process

- Before we can **understand** the concept we have to remember it
- Before we can **apply** the concept we must be understand it
- Before we **analyze** it we must be able to apply it
- Before we can **evaluate** its impact we must have analyzed it
- Before we can **create** we must have remembered, understood, applied, analyzed, and evaluated

As a Learning Process

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Do you agree
with these
statements?

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Does every task involve all of these levels?

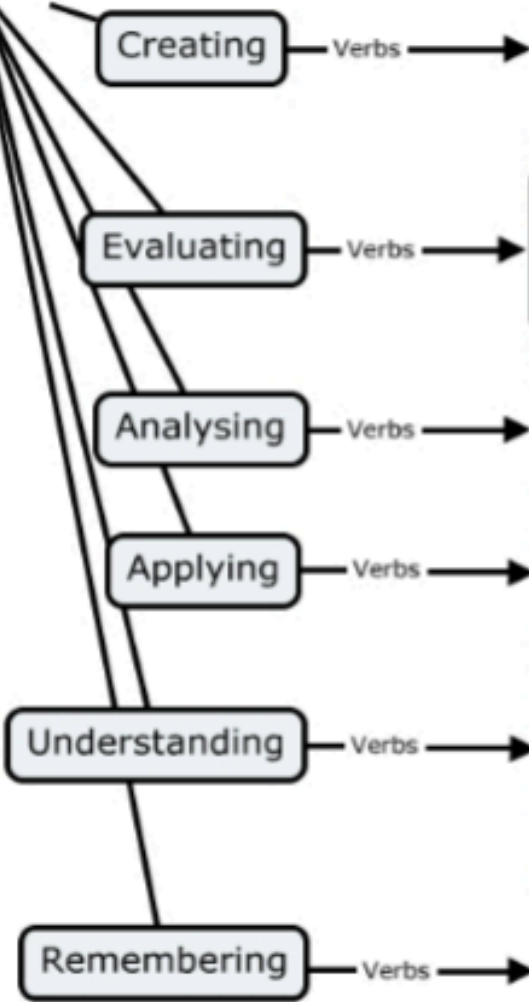
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Must we always start with remembering?

Bloom's Digital Taxonomy

Key Terms



HOTS Higher Order Thinking Skills

- Designing, constructing, planning, producing, inventing, devising, making,** programming, filming, animating, blogging video blogging, mixing, re-mixing, wiki-ing, publishing, videocasting, podcasting, directing, broadcasting
- Checking, hypothesising, critiquing, Experimenting, judging, testing, Detecting, Monitoring,** blog commenting, reviewing, posting, moderating, collaborating, networking, refactoring, testing.
- Comparing, organising, deconstructing** **Attributing, outlining, finding, structuring, integrating,** mashing, linking, validating, reverse engineering, cracking, media clipping
- Implementing, carrying out, using, executing,** running, loading, playing operating, hacking, uploading, sharing, editing
- Interpreting, Summarising, inferring, paraphrasing, classifying, comparing, explaining, exemplifying,** advanced searches, Boolean searches, blog journaling, twittering, categorising, tagging, commenting, annotating subscribing.
- Recognising, Listing, Describing, Identifying, Retrieving, Naming, Locating, Finding,** bullet pointing, highlighting bookmarking, social networking, social bookmarking, favouriting/local bookmarking, searching, googling.

- ### COMMUNICATION SPECTRUM
- Collaborating*
 - Moderating*
 - Negotiating*
 - Debating*
 - Commenting*
 - Net meeting*
 - Skyping*
 - video conferencing*
 - Reviewing*
 - Questioning*
 - Replying*
 - Posting & Blogging*
 - Networking*
 - Contributing*
 - Chatting*
 - e-mailing*
 - Twittering/Microblogging*
 - Instant messaging*
 - Texting*

LOTS Lower Order Thinking Skills

Image from (Churches 2009)

Changing Emphasis

- Historically focused on acquiring knowledge
 - Easily forgotten
 - Domain specific
 - Can just look things up
- Recent emphasis on HOTS
 - These skills stay with you once acquired

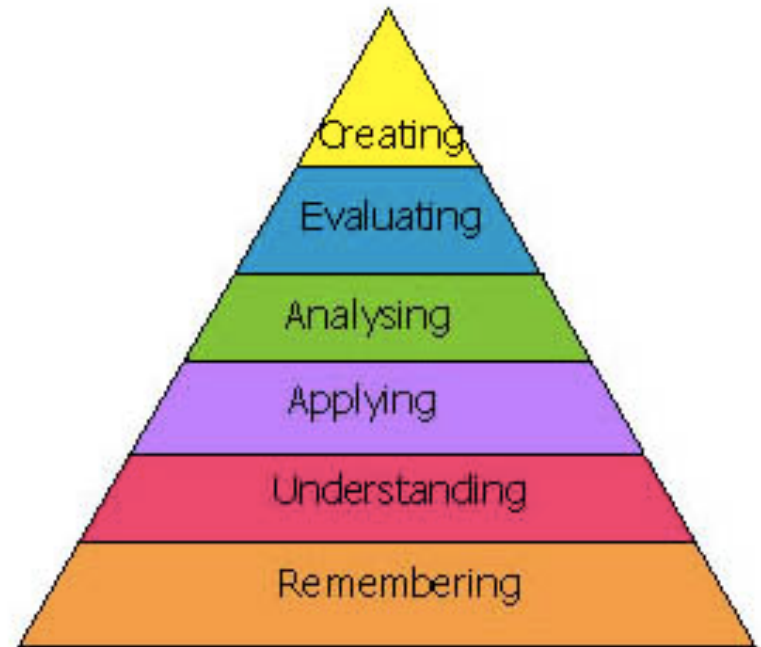
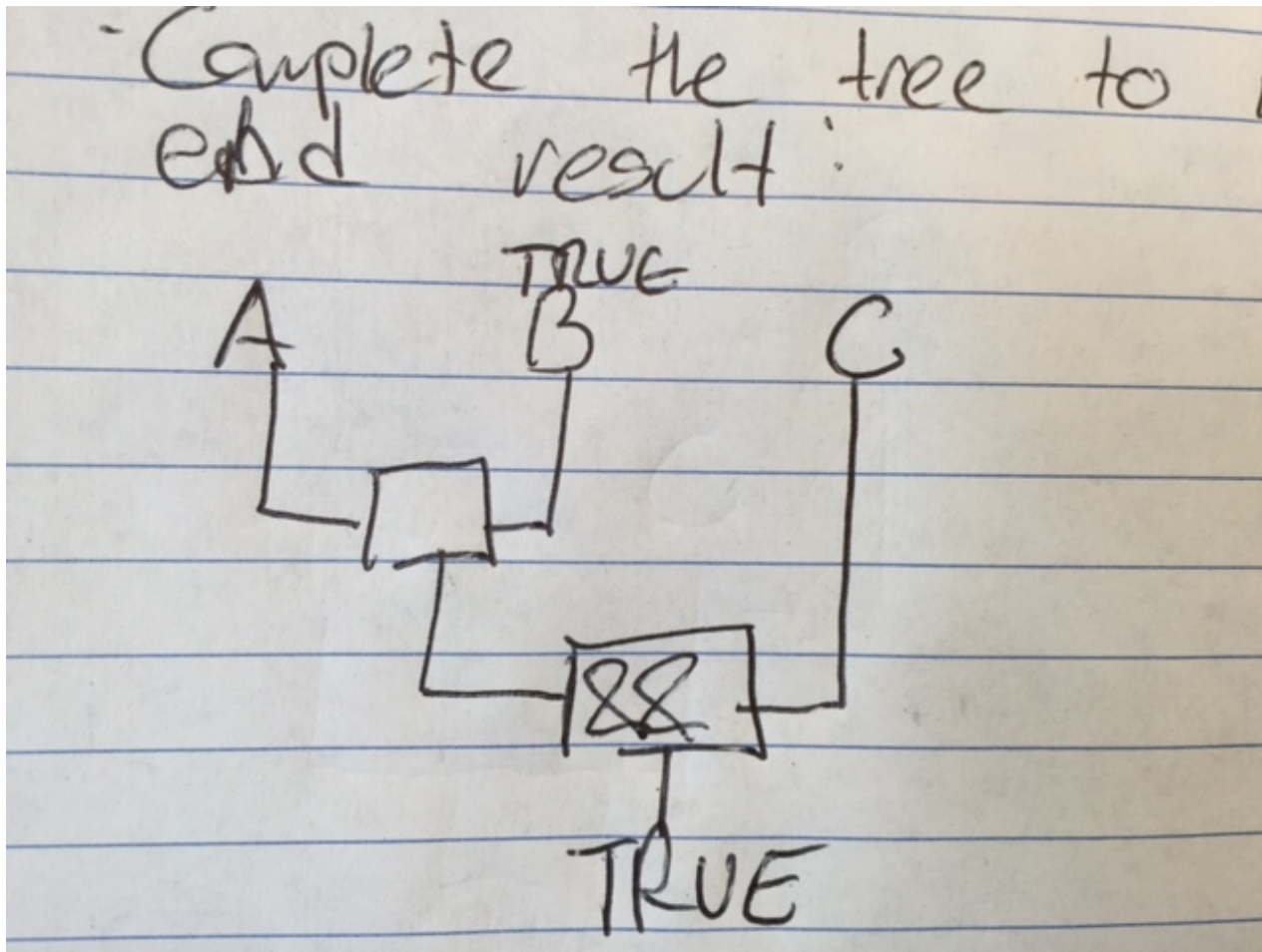


Image from <http://epltt.coe.uga.edu/>

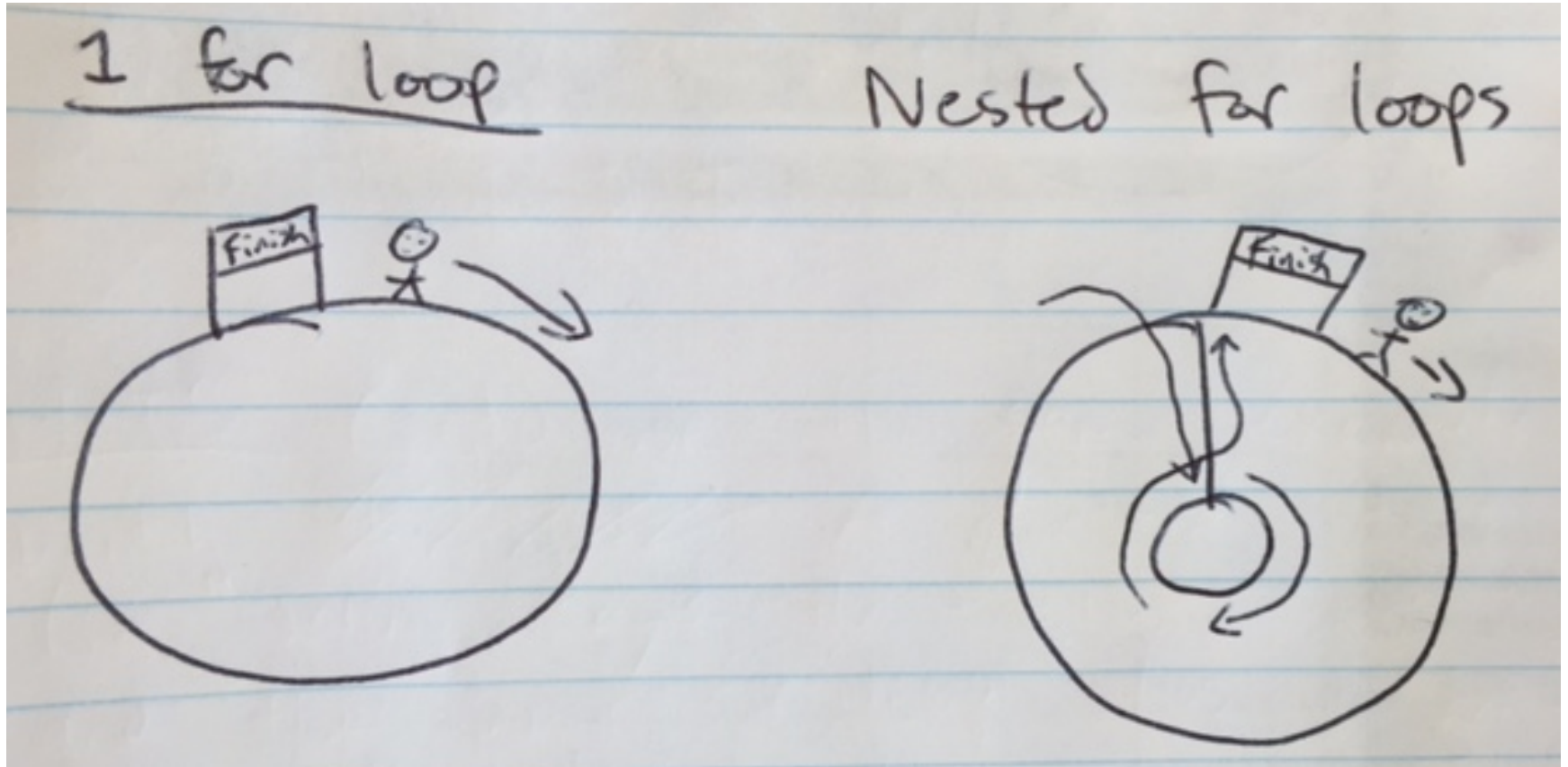
Design Activity

- What kind of game activities can we develop for the various levels of Bloom's taxonomy?
 - Target at least one LOTS and one HOTS

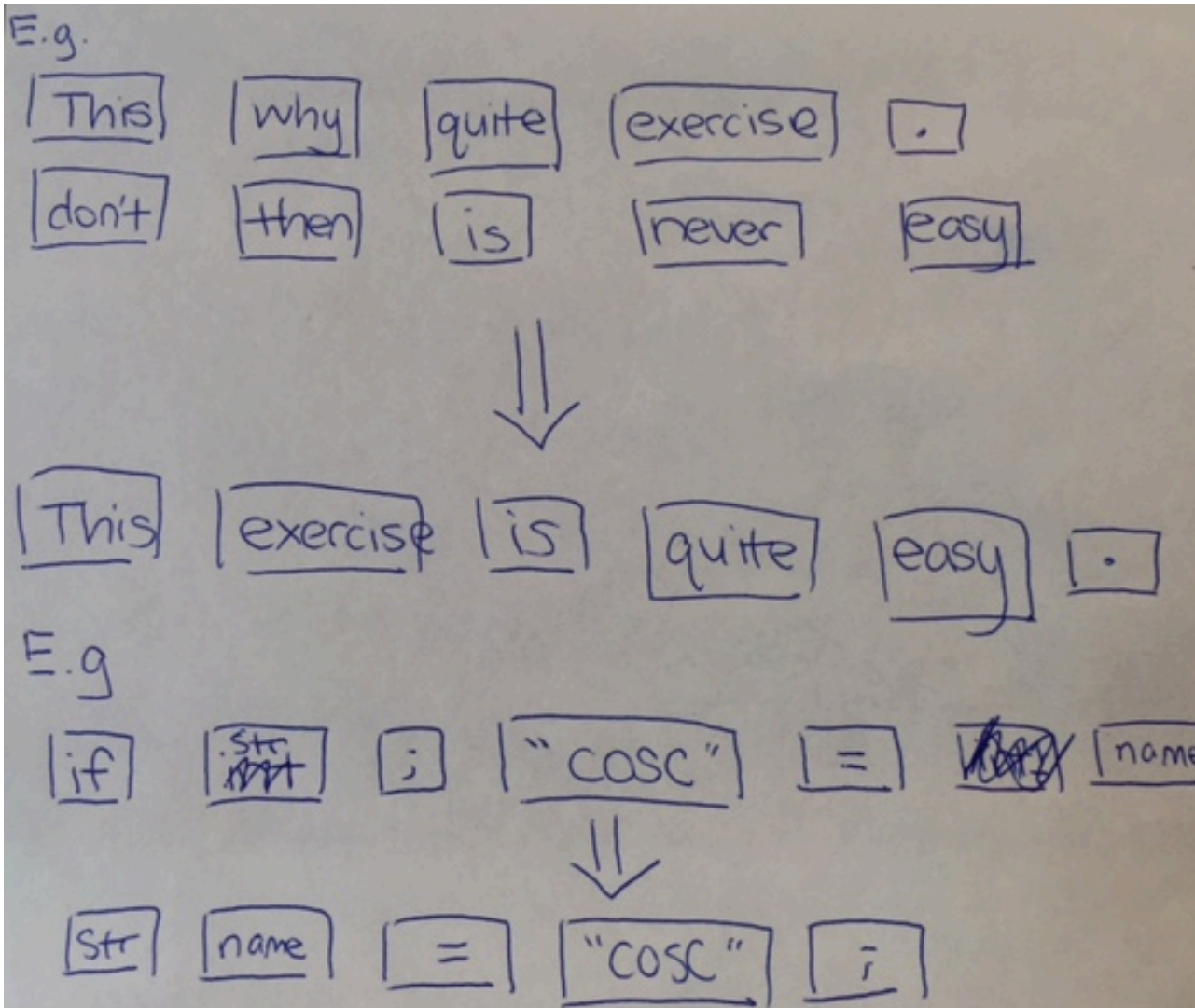
Boolean Logic: Fill in the blank



Loops: Fill in the blank, Mix/match to evaluation



Syntax: Building a statement



Conditionals: Code completion

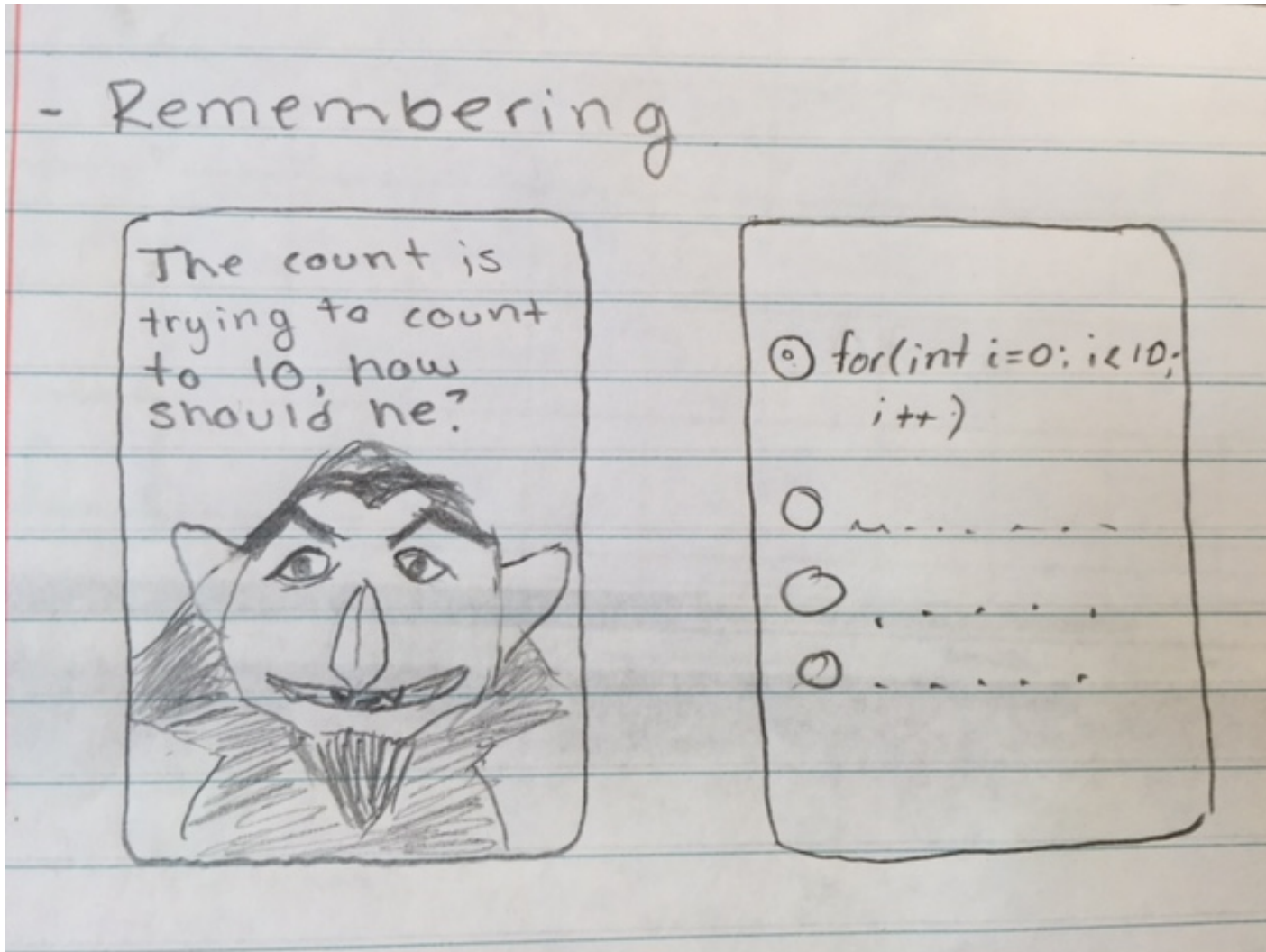
For example a robot needs to traverse a series of forks in the road and identify which lead to the goal and which are dead ends. The gamer can see the path and creates the correct logic for the robot to take. For example

```
if (numberOfTrees > 3 || numberOfRocks == 5)
    take the right path;
else
    take the left path;
```

The player uses the count of landmarks at each fork to create the logic for the statements.

One statement, then animation, then next statement, then animation, etc.?

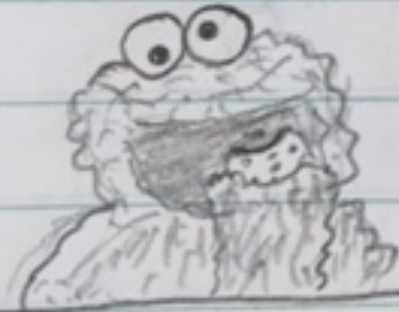
Loop: multiple choice format



Loop: Fill in the blank

- Creating

Cookie monster is hungry, he needs 5 cookies.



_____ ϵ
eatCookie();

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