

Create Task Prompts - Purpose and Development

2a. Provide a written response or audio narration in your video that:

- ◆ identifies the programming language;
- ◆ identifies the purpose of your program; and
- ◆ explains what the video illustrates.

(Must not exceed 150 words)

2b. Describe the incremental and iterative development process of your program, focusing on two distinct points in that process. Describe the difficulties and/ or opportunities you encountered and how they were resolved or incorporated. In your description clearly indicate whether the development described was collaborative or independent. At least one of these points must refer to independent program development. *(Must not exceed 200 words)*

2c. Capture and paste a program code segment that implements an algorithm (marked with an **oval** in **section 3** below) and that is fundamental for your program to achieve its intended purpose. This code segment must be an algorithm you developed individually on your own, must include two or more algorithms, and must integrate mathematical and/or logical concepts. Describe how each algorithm within your selected algorithm functions independently, as well as in combination with others, to form a new algorithm that helps to achieve the intended purpose of the program. *(Must not exceed 200 words)*

2d. Capture and paste a program code segment that contains an abstraction you developed individually on your own (marked with a **rectangle** in **section 3** below). This abstraction must integrate mathematical and logical concepts. Explain how your abstraction helped manage the complexity of your program. *(Must not exceed 200 words)*

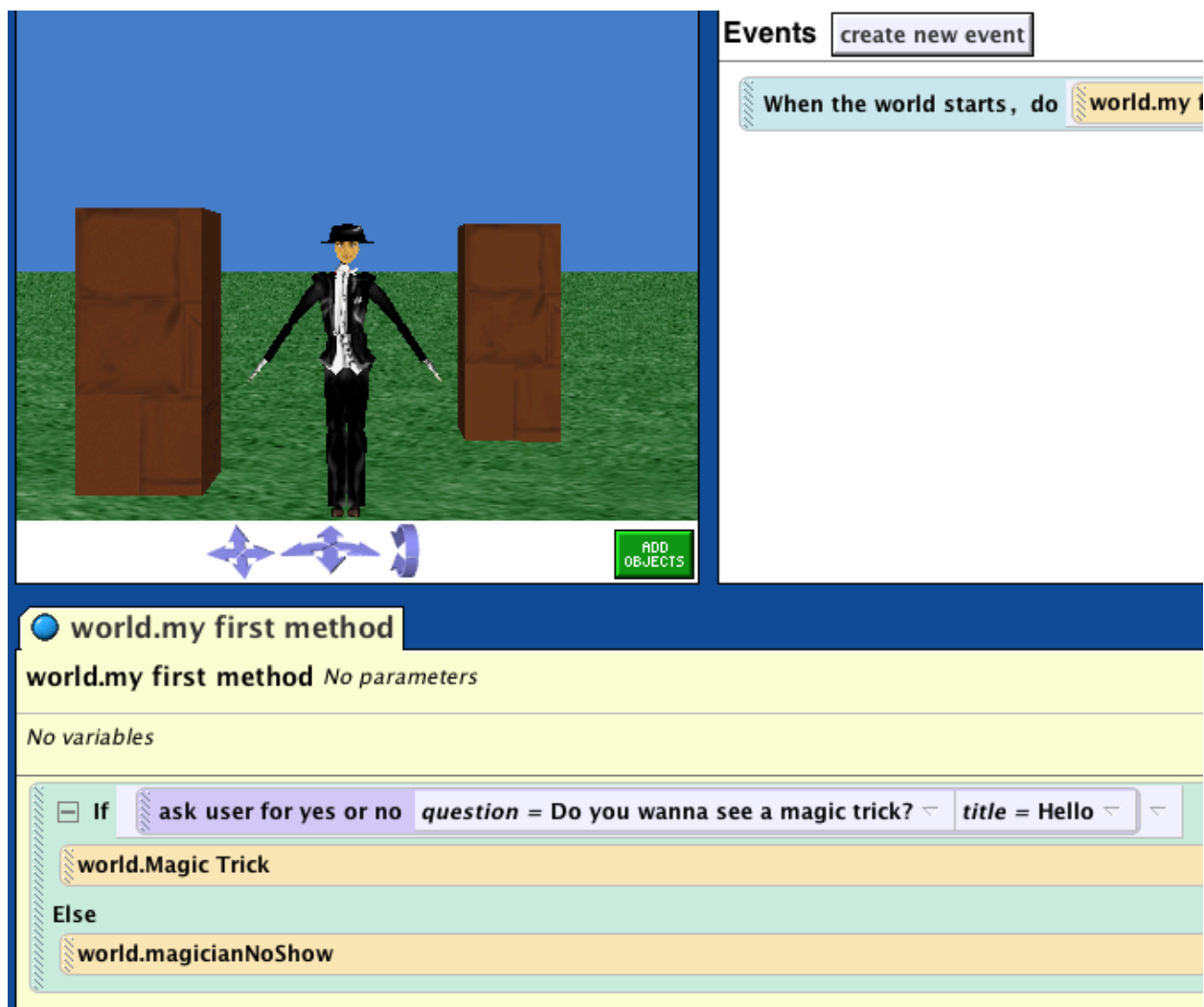
3. Program Code

Capture and paste your entire program code in this section.

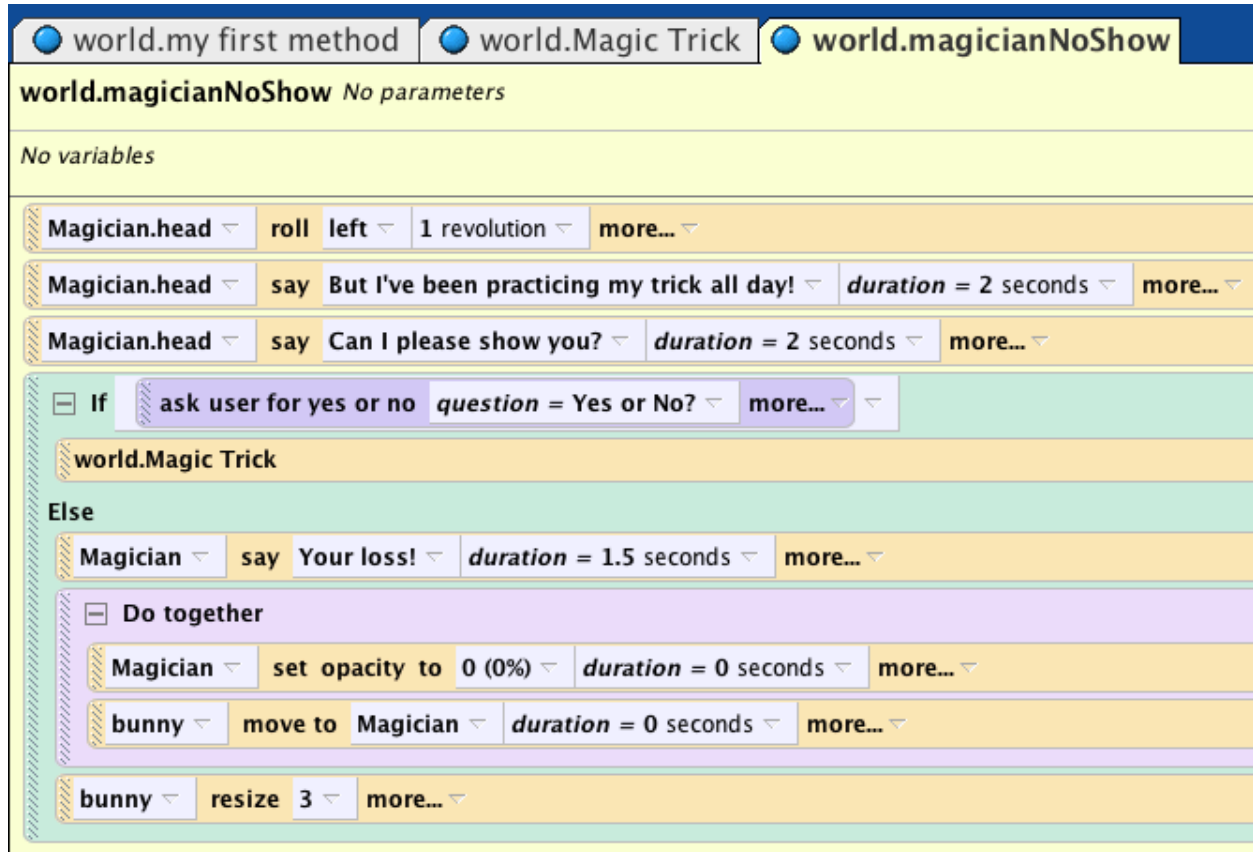
- > Mark with an **oval** the segment of program code that implements the algorithm you created for your program that integrates other algorithms and integrates mathematical and/or logical concepts.
- > Mark with a **rectangle** the segment of program code that represents an abstraction you developed.
- > Include comments or acknowledgments for program code that has been written by someone else.

Email From AP Reader about Abstraction

Any method they create in Alice that has more than one line of code is the use of abstraction in their program. write within the response 2d that the method they select is an abstraction they created to manage the complexity of their program; they are breaking down large problems into small manageable pieces, and simplifying their code by using less lines of code; it does not mean that the number of actual lines of code is reduced; it is simplifying or managing the complexity of the program through the use of abstraction with methods. it is easier to debug or fix errors in their programs when using methods. You can easily rearrange and reuse the method that you created so you do not have to rewrite the same code over and over again. These are the magic words that the college board is looking for from the students' responses. Here is an example of how we scaffold the use of abstraction in Create (screenshot below).



Discuss where the abstraction is occurring above. In this case, either the method world.Magic Trick or world.magicianNoShow selected as the abstraction occurring in this program. It reduced the actual number of lines of code within the method, thereby managing the complexity of the program. We then ask students to open the method that they selected to explain the use of abstraction in their program. In this case, world.magicNoShow (screenshot):



The method, world.magicianNoShow, demonstrates the use of abstraction by managing the complexity of the program by hiding the many details or the abstracted code for the method world.magicianNoShow. This is a clear form of abstraction since in world.my First Method shows only one line of code for world.magicianNoShow which actually when called executes several lines of code to run magicianNoShow; and you can rearrange, reuse this method in this program and other programs as well.

Preparing for the Create Performance Task

Prior to your teacher administering this task, you should:

- Brainstorm problems that programming can address, or brainstorm special interests that programming can help develop;
- Ensure you understand the iterative nature of developing a computer program;

- ▶ Be prepared to collaborate with peers as necessary and in different ways;
- ▶ Ensure you are able to analyze program code and code segments and explain the function as it relates to the overall program;
- ▶ Know how to keep a programming journal of the design choices that you will make during the development of your program code and the effect of these decisions on the program's function. You can use this journal as a point of reference when demonstrating your understanding of how:
 - > an algorithm was built as part of the integration of two or more algorithms;
 - > a program functions differently with the inclusion of algorithms and abstractions;
 - > the inclusion of an abstraction has made their program code more compact, readable and/or reusable and how the program would operate differently without the inclusion of the abstraction;