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Create Performance Task 2020-2021

Unit Create Performance Task

Revision Date: Sep 24, 2019
Duration: 15 50-minute sessions

Lesson Summary

Pre Lesson Preparation

Students should have practiced the following before starting on the Create Performance Task.

Video

Capturing program execution in a video

Documentation

Adding comments to code

Input and Output

Obtaining input that can be shown in a video.

Producing output that can be shown in a video.

Algorithms

Use sequence, selection and iteration to implement an algorithm.

Explaining how an algorithm accomplishes it task

Functions

Creating, calling and reusing student developed functions that use parameters.

Use parameters to determine which section of code executes.

Describing what a function does

Explaining what each call to a function tests?

Lists

Storing data in a list (collection)

Processing the data in a list

Explaining how lists help manages complexity by explaining how the program would be different without the list.

The Program must:

- Be developed to achieve a specific goal or purpose.
- Produce a result that demonstrates output, uses at least one list and a student developed function that uses at least one parameter.
- Include comments that acknowledge any code written by someone other that the student or their collaborative partner.
- Implement an algorithm that uses sequence, selection and iteration.

Outcomes:

- Students will design and implement a program to accomplish the program's intended purpose
- Students will use functional and data abstraction to manage program complexity.

- Students will be able to implement sequence, selection, iteration, and functions.

Learning Objectives

CSP Objectives

- *EU CRD-2 - Developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.*
  - LO CRD-2.G - Describe the purpose of a code segment or program by writing documentation.
  - LO CRD-2.H - Acknowledge code segments used from other sources.

Teacher Resources

Lesson Plan

Session 1

Objectives:

- Introduce the Create Performance Task (CPT).
- Students develop understanding of the CPT requirements.
- Students assess both the performance task requirements and its evaluation rubric.
- Students establish partnerships and do preliminary topic selection.

Introduction:

Tell students:

Today you will begin the Create Performance Task. In the CPT, you will be developing a program of your choice. The goal of this task is for you to develop a program to solve a problem, enable innovation, express creativity, or explore a personal interest.

In computer science and specifically in the create task, it is important that any code or content obtained from others is clearly identiied and distinguished from code or content created by the programmers. Code and other content created by someone else may be used by permission of its owners. This permission can obtained from owners who publish it with a Creative Commons license, or release it as open source or open access.

Exercise 1: CPT Overview (5 min)

Provide students with a copy of the AP Computer Science Principles Create Performance Task
2020-2021 description from the College Board.

1. Students read the Overview section on page 1 and answer the questions below. (5 min)
    1. What are you strongly encouraged to do?
    2. What parts of the project must you do individually?
    3. Who must develop the code submitted as part of written responses 3b and 3c?
2. Students share with elbow partners. Address any questions students have to this point.

Exercise 2: General Requirements (5 min)

1. Read the General Requirements section and answer the questions below. (5 min)
    1. How much class time will you have to complete this project?
    2. What three parts of the CPT are you required to submit?
    3. What does the video need to display?
    4. Where can you find scoring guidelines and instructions for submitting your performance task?
2. Students share with elbow partners. Address any questions students have to this point.

Exercise 3: Submission Requirements (30 min)

1. Read the Submission Requirements Program Code section and answer the questions below. (5 min))
    1. What three requirements does the program code have to meet?
    2. What does the output have to be based on?
    3. How many lists must the program use?
    4. How many parameters must be used by at least one procedure?
    5. What must be acknowledged in comments?
    6. The file submitted with the program file must be in what format?
2. Read the Submission Requirements Video section and answer the questions below.
    1. What there things must the video demonstrate?
    2. What three specifications must the video meet?
    3. What is not allowed during video development?
    4. What two things must the video not contain?
    5. What is encouraged in the video?
3. Read the Submission Requirements Written Responses section and answer the questions below regarding the written responses in general. (5 min))
    1. What file format must be used for the file that contains the written responses?
    2. How must the written responses be labeled?
    3. What is the combined maximum word length of all written responses?
    4. What is not allowed when answering the written responses?
4. Read the Submission Requirements Written Responses 3a section and answer the question below.
    1. What three things must be described in written response 3a?
5. Read the Submission Requirements Written Responses 3b section and answer the questions below.
    1. What must be shown by the two code segments copied into written response 3b?
    2. What two things must be identified in written response 3b?
    3. What must be explained in written response 3b?
6. Read the Submission Requirements Written Responses 3c section and answer the questions below.
    1. What must be implemented in the procedure copied into this written response?
    2. What must the function contain and use?

3. What three programming structures must the algorithm implemented in the selected function contain?
4. What must the written response describe about the selected function?
5. What must the written response explain about the selected function?

7. Read the Submission Requirements Written Responses 3d section and answer the questions below.
    1. How must the two function calls described in this response differ?
    2. What about the function must be described?
    3. What about the function must be identified?

Session 2
Objectives:

- Students commit to a program topic.
- Students plan collaboration strategy.
- Students design the program with a list and at least one function that implements an algorithm and uses at least one parameter
- Students develop a schedule for program implementation.

Tell students: Today we have four goals.

- Commit to a program topic
- Develop a collaboration strategy
- Develop a program design
- Develop an implementation schedule

NOTE: Students may only receive help from the collaborative partner from this point on until the CPT documents are ready to be submitted. Teachers may collects the topics, strategies, and designs in order to help manage student progress, but may not provide any feedback to students on content.

Warm Up: Rubric (5 min)

Distribute the CPT rubric . Meet with collaborative partners and discuss the CPT. Answer student questions about the rubric. Emphasis that the program requirements studied yesterday are the guide they should follow in developing their performance task.

Exercise 1: Topic (10 min)

Each partner chooses a program topic and competes the Topic Selection Guide - Draft

Exercise 2: Program Design (25 min)

Each individual submits a program design.

Answer the following questions.

How will you use a list in your program?

What functions will you use?

Which function(s) will use a parameter and have an algorithm that includes sequence, selection and iteration.

Exercise 3: Collaboration Strategy (10 min)

Each partner group submits a plan for collaboration and the Collaboration Agreement - Draft

Sessions 3 - 7

Same as sessions 3 and 4 except students complete a daily progress report.

- Students complete a daily progress report.
- Teachers will collect the progress report in order to monitor progress but may not provide any feedback to students on content.

Session 8: Checkpoint

Tell students: Today we will evaluate program development progress and revise a program development schedule as needed. All program development should be completed by the end of session 10.

- Students complete a daily progress report.
- Teachers will collect the progress report in order to monitor progress but may not provide any feedback to students on content.

Sessions 9 - 10

- Tell students: These should be the last program development days.
- Students complete a daily progress report.
- Teachers will collect the progress report in order to monitor progress but may not provide any feedback to students on content.
- If finished, students should begin storyboarding their video,

Session 11: Video

Students are to work individually from this point forward.

Tell students: Today will be dedicated to producing the CPT video.

Students should storyboard and develop captions for their video.

Students should capture video and add captions.

Exercise 1: Select Program Features (3 min)

Each individual selects features that demonstrate the programs overall purpose.

Exercise 2: Storyboard (10 min)

Students plan how to show the purpose of the program and the running of related features.

Students develop comments for video clips.

Exercise 3: Record clips for video (20 min)

Students record required clips and add comments.

Exercise 4: Video Clip Assessment (10 min)

Collaborative partners assess the video clips and recommend any additional clips or changes to existing clips.

Session 12: Video Development Day 2 if needed

Move to Session 13 if video is completed.

Session 13: Written Responses:

Exercise: Students write responses to prompts 3a and 3b (48 min)

Session 14: Written Responses:

Exercise: Students write responses to prompts 2d and 2e (48 min)

Session 15: CPT Submission

Objectives:

- Submit all CPT documents and upload them to the performance task submission web site.
- Complete a post task reflection.

Tell students: There are three goals for this session.

- Submit all three CPT documents by uploading them to the performance task submission web site.
- Complete a post task reflection.

Exercise 1: Upload CPT documents (15 min)

Students upload all three files..

Exercise 2: Post Task Reflection (15 min)

Students respond to these two questions.

- What did you learn about application development?
- What advice would you give to students in next year's class?

Note: Teachers may want to record students making these comments to be used to introduce the project next year.

Evidence of Learning

Formative Assessment

Students may not receive assistance regarding the content of their CPT documents until after they have been submitted to the College Board from nyone other than collaborative partner(s).

Summative Assessment

Students may not receive assistance regarding the content of their CPT documents until after they have been submitted to the College Board.

Once the documents have been submitted teachers may use the CPT rubric to assess performance task documents. The table below is a suggested weigthing.

Rubric Points	100 Point scale
No project submitted	0
1 Component Completed	20
2 Components Completed	40
1	50
2	60
3	70
4	80
5	90
6	100

To obtain a score for the period of time students are developing the CPT, teachers may want to use the following scale:

Project Development Progress: 50 pts

Over 15 days, students submit a project assessment, a program development plan and at least 6 daily progress reports and complete a program checkpoint.

Program Code Development (30 points)

Weighted as 5 points for each day:

0 points no progress

1 point sporadic or minimal progress

2 points inconsistent progress

5 points consistent progress

Video Progress: 10 pts

2 Days of video development

5 points for each day

0 points no progress

1 point sporadic or minimal progress

2 points inconsistent progress

5 points consistent progress

1 Day of video development

10 points for each day

0 points no progress

2 point sporadic or minimal progress

4 points inconsistent progress

10 points consistent progress

Written Report Progress: 10 pts

2 Days of video development

5 points for each day

0 points no progress

1 point sporadic or minimal progress

2 points inconsistent progress

5 points consistent progress

Rubric score 30 pts


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