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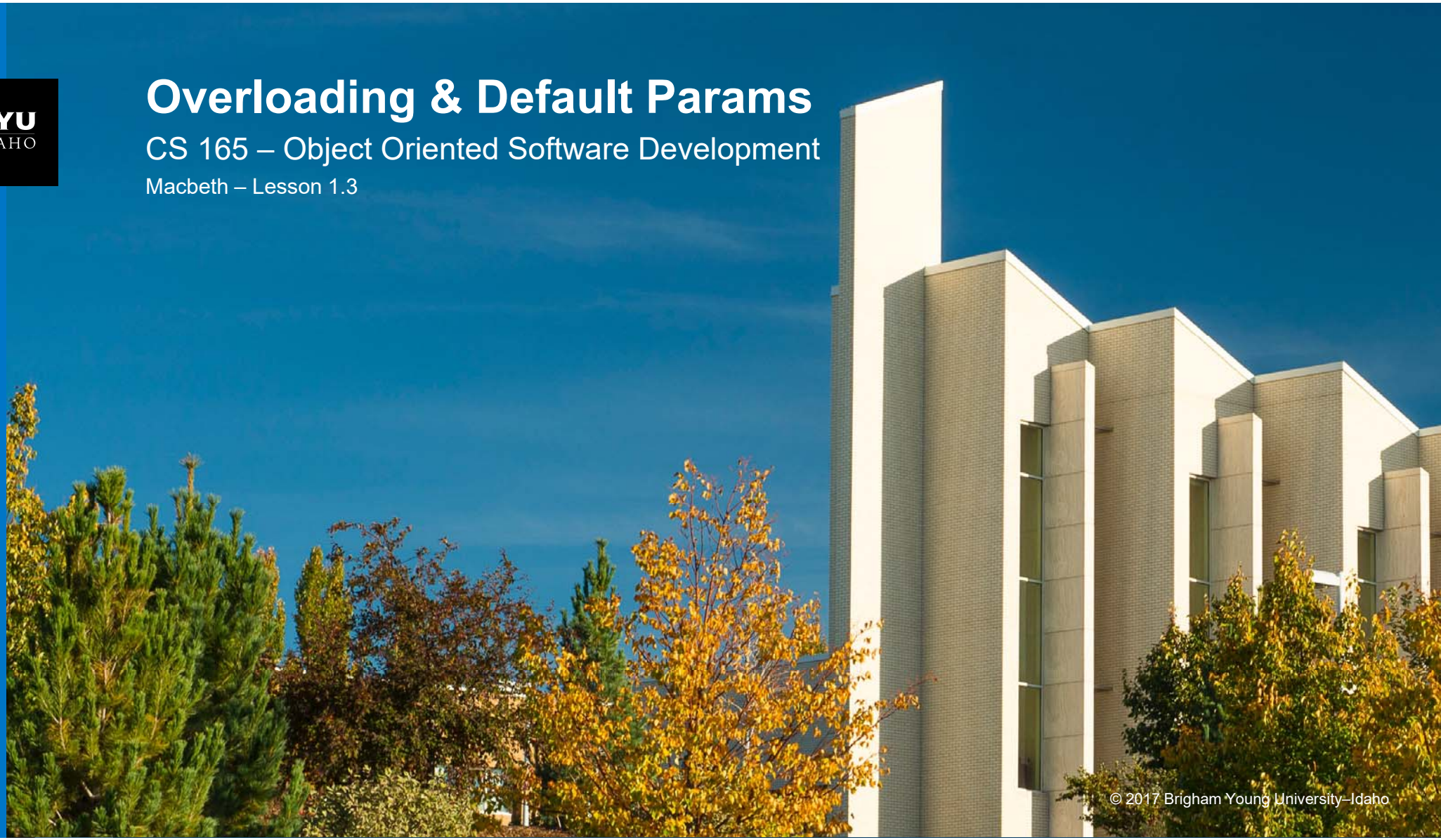
Overloading & Default Params

CS 165 – Object Oriented Software Development

Macbeth – Lesson 1.3



Agenda

- Opening Prayer
- Music Friday
- Q&A
- Debugging
- Overloaded Functions & Default Parameters
- Looking Ahead

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Music Friday

<u>High on the Mountain Top (Hymnal #5)</u>

High on the mountain top
A banner is unfurled
Ye nations, now look up;
It waves to all the world.
In Deseret's sweet, peaceful land,
On Zion's mount behold it stand!

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Safe Divide

- Write a function called “safeDivide” with the following parameters:

```
bool safeDivide(double num, double denom, double &answer)
```

- If the denominator is 0, then set the answer to 0 and return false (error condition).
- If the denominator is not 0, then set the answer to num / denom and return Boolean true.

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Rules for Overloading

You can have the same function name if the parameter types (not including modifiers) are different. Excluded from this rule are return types.

Example	Correct or Not Correct
`string toString(int x);` `string toString(float x);`	CORRECT
`int add(int x, int y);` `float add(float x, float y);`	CORRECT
`int draw(int x, int y);` `int draw(int *x, int *y);`	NOT CORRECT
`void swap(int &x, int &y);` `void swap(float &x, float &y);`	CORRECT
`int wait(int timer);` `bool wait(int timer);`	NOT CORRECT
`void printIt(string text);` `void printIt(string text[]);`	CORRECT

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Example of Overloading

You want to overload a function called `createList` which will create list of strings. Create 3 function prototypes with the same `createList` name that do the following:

- Create an empty list

```
int createList(string *list, … )
```

- Create a list and populate it with a user provided array of strings

```
int createList(string *list, … )
```

- Create a list from a file using a user provided input file stream

```
int createList(string *list, … )
```

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Rules for Default Parameters

- Default (or optional) parameters must be listed after required parameters.
- Default parameters supplied by the calling function are applied in order.
- Example:

```
void search(string data[], int size, string target, bool exact = true, int timeout = 10000)
```

Example	Result
`search(data,size,"snyder");`	`exact = true` `timeout = 10000`
`search(data,size,"snyder",false);`	`exact = false` `timeout = 10000`
`search(data,size,"snyder",false,20000);`	`exact = false` `timeout = 20000`

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Example of Default Parameters

How would you modify the `createList` function to allow the “create empty list” option to include a default parameter to specify the initial size of the list (even though each entry will remain empty)?

```
int createList(string *list)
```

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Looking Forward

- Tonight
  - 01 Prepare – Submit Checkpoint A by 11:59pm
  - 01 Prepare – Submit Checkpoint B by 11:59pm

- Monday
  - On your phones, download the Kahoot app before class
  - 01 Prove – Submit Assignment by 11:59pm

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