Beijing National Day School
Department of Mathematics & Computer Science

AP Computer Science Principles

Semester 2 Exam

Location: `Library, 6th Floor, Aspiration Building`
Date: `Wednesday, June 26th, 2019`
Start Time: `2:00PM`
End Time: `4:00PM`
NO CALCULATORS PERMITTED

English Name: _____

Pinyin Name: _____

Mr. Alwin Tareen, June 2019

Exam Record

Multiple Choice _____/ 30 pts

Short Answer _____/ 30 pts

Reflections _____/ 30 pts

Total: _____/ 90 pts

Grade: _____

Section I: Multiple Choice (30 points)

- Number of questions: 30. Percent of total grade: $33\frac{1}{3}$.
- Decide which is the best of the choices given, and select the correct answer by placing an "**X**" in the corresponding box.

(1pt) **1.** Which of the following choices is a legal and legitimate `Python` variable name?

1 pt

- ☐ `2bad4you`
- ☐ `calvin&hobbes`
- ☐ `year2000`
- ☐ `#hammertime`

(1pt) **2.** You would like to set up a variable called `ounces` that has the value `16`. What simple `Python` statement will accomplish this?

1 pt

- ☐ `ounces = 16`
- ☐ `16 = ounces`
- ☐ `def ounces(16):`
- ☐ `ounces(16)`

(1pt) **3.** What does the following `Python` statement print out:

```
print("123" + "abc")
```

1 pt

- ☐ `"123" + "abc"`
- ☐ This is a syntax error because you cannot add strings.
- ☐ `123+abc`
- ☐ `123abc`

(1pt) **4.** In `Python`, the `float` data type is used to store:

1 pt

- ☐ booleans
- ☐ decimal numbers
- ☐ strings
- ☐ integers

(1pt) **5.** What is the result of the following `Python` statement:

```
print(42%10)
```

1 pt

- ☐ `1042`
- ☐ `420`
- ☐ `4`
- ☐ `2`

5 pts

(1pt) **6.** Which of the following choices is the correct assignment statement for a `string` data type?

1 pt

- ☐ `greetings = [Hello]`
- ☐ `greetings = @Hello@`
- ☐ `greetings = "Hello"`
- ☐ `greetings = #Hello#`

(1pt) **7.** What is the result of the following `Python` statement:

```
print(17/4)
```

1 pt

- ☐ `4`
- ☐ `4.0`
- ☐ `4.3`
- ☐ `4.25`

(1pt) **8.** What are the only values that are permissible in `Python`'s `boolean` data type?

1 pt

- ☐ `Yes, No`
- ☐ `On, Off`
- ☐ `Right, Wrong`
- ☐ `True, False`

(1pt) **9.** Which of the following is a comment in `Python`?

1 pt

- ☐ `/* This is a test */`
- ☐ `// This is a test`
- ☐ `# This is a test`
- ☐ `% This is a test`

(1pt) **10.** Which of the following elements of a mathematical expression in `Python` is evaluated first?

1 pt

- ☐ Multiplication `*`
- ☐ Addition `+`
- ☐ Parenthesis `()`
- ☐ Subtraction `-`

(1pt) **11.** What will be the value of `x` when the following statement is executed: `x = int(98.6)`

1 pt

- ☐ `99`
- ☐ `6`
- ☐ `98`
- ☐ `100`

6 pts

(1pt) **12.** What does the `Python` function `input()` do?

- ☐ Pause the program and read data from the user.
- ☐ Take a screen shot from an area of the screen.
- ☐ Read the memory of the running program.
- ☐ Connect to the network and retrieve a web page.

1 pt

(1pt) **13.** Which `Python` keyword indicates the start of a function definition?

- ☐ `sweet`
- ☐ `def`
- ☐ `continue`
- ☐ `return`

1 pt

(1pt) **14.** Consider the following function definition:

```
def circlearea(radius):
```

In this context, what is the formal name for the variable `radius`?

- ☐ expression
- ☐ logical deduction
- ☐ parameter
- ☐ condition

1 pt

(1pt) **15.** What does the following Python program print out?

```
str1 = "Hello"
str2 = "there"
greet = str1 + str2
print(greet)
```

- ☐ `Hello there`
- ☐ `Hellothere`
- ☐ `there`
- ☐ `Hello`

1 pt

(1pt) **16.** How would you use the index operator to print out the letter `"q"` from the following string?

```
x = "From marquard@uct.ac.za"
```

- ☐ `print(x[9])`
- ☐ `print(x[8])`
- ☐ `print(x[-1])`
- ☐ `print(x[q])`

1 pt

5 pts

(1pt) **17.** How would you use string slicing to print out `"uct"` from the following string?

1 pt

```
x = "From marquard@uct.ac.za"
```

- ☐ `print(x[14+17])`
- ☐ `print(x[15:18])`
- ☐ `print(x[14:17])`
- ☐ `print(x[14:3])`

(1pt) **18.** What is the iteration variable in the following `Python` code?

1 pt

```
for letter in "banana":
    print(letter)
```

- ☐ `letter`
- ☐ `print`
- ☐ `in`
- ☐ `"banana"`

(1pt) **19.** How would you print out the following string in all upper case in `Python`?

1 pt

```
greet = "Hello there"
```

- ☐ `puts greet.ucase;`
- ☐ `print(uc($greet))`
- ☐ `print(greet.upper())`
- ☐ `console.log(greet.toUpperCase());`

(1pt) **20.** What does the following Python program print out?

1 pt

```
data = "From stephen.marquard@uct.ac.za"
pos = data.find(".")
print(data[pos:pos+3])
```

- ☐ `uct`
- ☐ `mar`
- ☐ `.ma`
- ☐ `ste`

(1pt) **21.** For the following list, how would you print out `"Sally"`?

1 pt

```
friends = ["Joseph", "Glenn", "Sally"]
```

- ☐ `print(friends[3])`
- ☐ `print(friends["Sally"])`
- ☐ `print(friends[2])`
- ☐ `print(friends[2:1])`

5 pts

(1pt) **22.** Which of the following Python statements would print out the length of a list stored in the variable `fruit`?

1 pt

- ☐ `print(length(fruit))`
- ☐ `print(fruit.length())`
- ☐ `print(len(fruit))`
- ☐ `print(strlen(fruit))`

(1pt) **23.** What type of data is produced when you call the `range()` function? For example, consider the statement: `nums = range(5)`

1 pt

- ☐ A list of characters
- ☐ A list of integers
- ☐ A list of words
- ☐ A string

(1pt) **24.** What does the following Python code print out?

1 pt

```
first = [1, 2, 3]
second = [4, 5, 6]
nums = first + second
print(len(nums))
```

- ☐ `[1, 2, 3]`
- ☐ `[1, 2, 3, 4, 5, 6]`
- ☐ `[4, 5, 6]`
- ☐ `6`

(1pt) **25.** Which of the following slicing operations will produce the list `[12, 3]`?

1 pt

```
nums = [9, 41, 12, 3, 74, 15]
```

- ☐ `nums[1:3]`
- ☐ `nums[2:4]`
- ☐ `nums[2:2]`
- ☐ `nums[12:3]`

(1pt) **26.** Which list method adds a new item to the end of an existing list?

1 pt

- ☐ `add()`
- ☐ `append()`
- ☐ `index()`
- ☐ `push()`

5 pts

(1pt) **27.** What will the following Python code print out?

1 pt

```
friends = ["Joseph", "Glenn", "Sally"]
friends.sort()
print(friends[0])
```

- ☐ `Glenn`
- ☐ `Joseph`
- ☐ `friends`
- ☐ `Sally`

(1pt) **28.** Which of the following Python functions deletes an element from a list?

1 pt

- ☐ `push()`
- ☐ `pop()`
- ☐ `invalidate()`
- ☐ `split()`

(1pt) **29.** Which of the following Python functions breaks a string into a list of words?

1 pt

- ☐ `split()`
- ☐ `join()`
- ☐ `remove()`
- ☐ `extend()`

(1pt) **30.** What task does the following Python code perform?

1 pt

```
for num in range(1, 10, 2):
    print(num)
```

- ☐ It prints all the ODD numbers in the range `[1, 9]`
- ☐ It prints all numbers in the range `[1, 9]`
- ☐ This code fails with a traceback.
- ☐ It prints all the EVEN numbers in the range `[1, 10]`

4 pts

Section II: Short Answer (30 points)

- Number of questions: 30. Percent of total grade: $33\frac{1}{3}$.
- Answer each of the following questions in the space provided.

(1pt) **1.** What is the output of the following `Python` code:

```
print(3 > 4 or (2 < 3 and 9 > 10))
```

Answer:

1 pt

(1pt) **2.** What is the output of the following `Python` code:

```
spice = "cinnamon"
print(len(spice))
```

Answer:

1 pt

(1pt) **3.** What is the output of the following `Python` code:

```
breakfast = "pineapple"
print(breakfast[0:4])
```

Answer:

1 pt

(1pt) **4.** What is the output of the following `Python` code:

```
flavor = "strawberry"
print(flavor[2:5])
```

Answer:

1 pt

(1pt) **5.** What is the output of the following `Python` code:

```
lunch = "cheeseburgers"
print(lunch[6:12])
```

Answer:

1 pt

(1pt) **6.** What is the output of the following `Python` code:

```
candy = "bubble" + "gum"
print(candy)
```

Answer:

1 pt

(1pt) **7.** What is the output of the following `Python` code:

```
triple = "hello" * 3
print(triple)
```

Answer:

1 pt

(1pt) **8.** What is the output of the following `Python` code:

```
greeting = "Hello, world!"
newgreeting = "J" + greeting[1:]
print(newgreeting)
```

Answer:

1 pt

8 pts

(1pt) **9.** What is the output of the following `Python` code:

```
print("cola" in "chocolate")
```

Answer:

1 pt

(1pt) **10.** What is the output of the following `Python` code:

```
print("seed" in "banana")
```

Answer:

1 pt

(1pt) **11.** What is the output of the following `Python` code:

```
fruit = "strawberry"
bigfruit = fruit.upper()
print(bigfruit)
```

Answer:

1 pt

(1pt) **12.** What is the output of the following `Python` code:

```
vegetable = "cauliflower"
index = vegetable.find("u")
print(index)
```

Answer:

1 pt

(1pt) **13.** What is the output of the following `Python` code:

```
line = "Please have a nice day"
print(line.startswith("Please"))
```

Answer:

1 pt

(1pt) **14.** What is the output of the following `Python` code:

```
meal = "fresh pizza is the best pizza"
print(meal.replace("pizza", "salad"))
```

Answer:

1 pt

(1pt) **15.** What is the output of the following code:

```
cheeses = ["Cheddar", "Edam", "Gouda"]
print(cheeses[0])
```

Answer:

1 pt

(1pt) **16.** What is the output of the following code:

```
lunch = ["soup", "salad", "rice", "beans"]
lunch[1:3] = ["fries", "noodles"]
print(lunch)
```

Answer:

1 pt

8 pts

(1pt) **17.** What is the output of the following code:

```
food = ["chicken", "beef", "fish"]
supplies = ["soap", "detergent"]
groceries = food + supplies
print(groceries)
```

Answer:

1 pt

(1pt) **18.** What is the output of the following code:

```
print([0] * 4)
```

Answer:

1 pt

(1pt) **19.** What is the output of the following code:

```
snacks = ["pizza", "burger"]
snacks.append("fries")
print(snacks)
```

Answer:

1 pt

(1pt) **20.** What is the output of the following code:

```
notes = ["do", "ray", "mi"]
melody = ["fa", "so", "la"]
notes.extend(melody)
print(notes)
```

Answer:

1 pt

(1pt) **21.** What is the output of the following code:

```
breakfast = ["eggs", "juice", "toast"]
breakfast.insert(1, "bacon")
print(breakfast)
```

Answer:

1 pt

(1pt) **22.** What is the output of the following code:

```
drinks = ["tea", "soda", "cola", "juice"]
drinks.sort()
print(drinks)
```

Answer:

1 pt

(1pt) **23.** What is the output of the following code:

```
meals = ["breakfast", "lunch", "dinner"]
meals.reverse()
print(meals)
```

Answer:

1 pt

7 pts

(1pt) **24.** What is the output of the following code:

```
snacks = ["pizza", "wings", "soda", "chips"]
snacks.remove("soda")
print(snacks)
```

Answer:

1 pt

(1pt) **25.** What is the output of the following code:

```
drinks = ["tea", "coffee", "cookie", "juice"]
pastry = drinks.pop(2)
print(pastry)
```

Answer:

1 pt

(1pt) **26.** What is the output of the following code:

```
dinner = ["salad", "bread", "steak", "potato"]
del dinner[1]
print(dinner)
```

Answer:

1 pt

(1pt) **27.** What is the output of the following code:

```
cheatcode = ["up", "up", "down", "down", "down", "left", "right"]
presses = cheatcode.count("down")
print(presses)
```

Answer:

1 pt

(1pt) **28.** What is the output of the following code:

```
toppings = ["salt", "cheese", "vinegar", "bbq"]
position = toppings.index("bbq")
print(position)
```

Answer:

1 pt

(1pt) **29.** What is the output of the following code:

```
lunch = "pizza"
letters = list(lunch)
print(letters)
```

Answer:

1 pt

(1pt) **30.** What is the output of the following code:

```
favourite = "I like hamburgers"
words = favourite.split()
print(words)
```

Answer:

1 pt

7 pts

Section III: Reflection Questions (30 points)

- Number of questions: 3. Percent of total grade: $33\frac{1}{3}$.
- Answer each of the following questions in the space provided. These questions are based on material from the book, "Blown to Bits."

Reflections from Chapter 1: Digital Explosion

(10^{pts}) **1.** Consider the tragic case of Tanya Rider, who was involved in a serious car accident while driving alone on her way to work. Her car skidded off the side of the road, proceeded down a steep embankment, and came to rest at the bottom of a deep ravine. She was discovered several days later, as rescuers followed the electronic trail that she had left behind. List the several ways in which digital communication was involved in the discovery and ultimate rescue of Tanya. Describe how these aspects were either helpful or not, in solving the case.

10 pts

10 pts

Reflections from Chapter 2: Naked in the Sunlight

(10pts) **2.** The concept of privacy has emerged as a major concern among users of popular search engines, and social media websites. Giant Internet companies, such as Google or Facebook, offer plenty of free tools and resources, in exchange for their users' personal information. Do you consider this to be an acceptable tradeoff? Explain.

10 pts

10 pts

Reflections from Chapter 3: Ghosts in the Machine

(10pts) **3.** Consider the decision by the Commonwealth of Massachusetts to adopt the "OpenDocument Format"(`ODF`) for all of their documents, rather than using the conventional Microsoft Office Format(`DOC`). What were some of the perceived benefits that the government administrators Kriss and Quinn cited in making this switch? Do you think that Microsoft's lawyers made a compelling argument against this proposal? Explain.

10 pts

10 pts