

# CS150 - Midterm “Cheat Sheet”

## 1 Input/Output

- Reading input from the user  
`raw_input(message)`: Displays *message* to the user and returns what the user typed as a string

- Reading from a file

```
file = open(filename, "r")
```

```
for line in file:  
    # do something
```

```
file.close()
```

## 2 Strings

- The following functions are built-in and answer questions about strings
  - `len(string)`: Returns the number of characters in the string
  - `int(string)` `float(string)`: Converts a string to an `int` or `float`
- String object methods
  - `upper()` `lower()`: Returns a new string that is upper or lower cased
  - `find(some_string)`: Returns the index that *some\_string* occurs at in the string or -1 if it does not occur.
  - `find(some_string, index)`: Same as above, but starts searching at *index*
  - `replace(old, new)`: Return a copy of the string with all occurrences of *old* substituted with *new*
  - `startswith(prefix)`: Returns `True` if the string starts with *prefix*, `False` otherwise
  - `endswith(prefix)`: Returns `True` if the string ends with *prefix*, `False` otherwise
  - `strip()`: Returns a copy of the string with leading and trailing whitespace removed

- `split()`: Return a list of the words in the string using a space as the delimiter
- String operators
  - `string1 + string2`: Returns a new string that is the concatenation of *string1* and *string2*
  - `string * int`: Returns a new string that is *string* repeated *int* times

### 3 Lists

- The following functions are built-in and answer questions about lists
  - `len(list)`: Returns the number of entries in the list
- List object methods
  - `append(x)`: Adds *x* to the end of the list
  - `extend(other_list)`: Adds all of the elements in *other\_list* to the end of the list
  - `insert(index, x)`: Insert *x* at *index* in the list
  - `pop()`: Removes the item at the end of the list and returns it
  - `pop(index)`: Removes item at *index* from the list and returns it
  - `reverse()`: Reverses the elements in the list
  - `sort()`: sorts the elements in the list
- List operators
  - `list1 + list2`: Returns a new list that contains the elements of *list1* followed by the elements of *list2*
  - `list * int`: Returns a new list that contains the items in *list* repeated *int* times

### 4 Modules

- `turtle` module
  - `forward(distance)`: Move the turtle forward by the specified *distance*
  - `right(angle)` `left(angle)`: Turn the turtle right/left by *angle*
  - `goto(x, y)`: Move turtle to position *x, y*
  - `setheading(angle)`: Set the turtles heading to *angle*
  - `circle(radius)`: Draw a circle with radius *radius*
  - `penup()`: Pull the pen up – no drawing when moving
  - `pendown()`: Put the pen down – drawing when moving

- `fillcolor(color)`: Change the fill color to *color*, where *color* is a string
- `begin_fill()`: Start filling
- `end_fill()`: Fill in the shape drawn since the last call to `begin_fill`
- `random` module
  - `randint(a, b)`: Return a random integer  $N$  such that  $a \leq N \leq b$
  - `uniform(a, b)`: Return a random floating point number  $N$  such that  $a \leq N \leq b$
- `math` module
  - `sqrt(num)`: Return the square root of *num*