This quiz has 3 questions, for a total of 10 points.

Consider the following Python program.

```python
n = 2 if input() else 0
i = 0
a = n
print a
while i < n:
    i = i + 1
    n = (a ** -1) * 4
    a = n
print a
```

1. **3 points** Given input “1”, what is the output of the program.

Solution:

```
2
2.0
```

2. **4 points** Perform type analysis and write down the type for each variable in the program.

Solution:

```
n : pyobj
i : int
a : pyobj
```

3. **3 points** Translate the program to C, performing type specialization whenever possible.

Solution:

```c
int main() {
    pyobj a;
    int i;
    pyobj n;
    n = int_to_pyobj(pyobj_to_bool(input()) ? 2 : 0);
    i = 0;
    a = n;
    print_any(a); printf("\n");
    while (((int tmp0 = i; less(int_to_pyobj(tmp0), n);)) {
        i = ({ int left1 = i; left1 + 1;});
        n = ({ pyobj left3 = ({ pyobj left2 = a;
            power(left2, int_to_pyobj(-1));});
            mul(left3, int_to_pyobj(4));});
        a = n;
    }
    print_any(a);printf("\n");
    return 0;
}
```