Errors in Code…

- Problem:
  Code does not work…

- Question:
  What should I do?

General Hints

- Find infinite loops using test-outputs
  - **e.g.** `std::cout << "Hi";`

General Hints

- Find infinite loops using test-outputs
  - e.g. `std::cout << "Hi";`

- Output variables using `std::cout`

Example

Problem: This code **does not stop**…

```cpp
#include <iostream>

int main () {
    int n = 6;

    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i < 13; ++i)
        prod *= n;

    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Example

Problem: This code **does not stop**…

Find **infinite loops** using
test-outputs

```
        return 0;
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Example

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}
```

Example

Problem: This code **does not stop**...

Output

```cpp
#include <iostream>

int main () {
    int n = 6;
    std::cout << "Hi!";
    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i < 13; ++i)
        prod *= n;

    // Output stars
    for (int i = 1; i < prod; ++i)
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    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

NO Output

Example

Problem: This code **does not stop**...

Problem here

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Example

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```

Note:

Condition only candidate

Probl

Problem: **Evaluation**

$$1 <= i < 13$$

(1 <= i) < 13

true < 13

1 < 13

true

false < 13

0 < 13

true

n only
date

}

Prob

WRONG: 1 <= i < 13

RIGHT: 1 <= i **&&** i < 13

n only
date

}

Example

This works!

```cpp
#include <iostream>

int main () {
    int n = 6;

    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i && i < 13; ++i)
        prod *= n;

    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Example

- Now program finishes.

Example

- Now program finishes.

- But **no output**.   :-(

Example

Problem: **no output**

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#include <iostream>

int main () {
    int n = 6;

    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i && i < 13; ++i)
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    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Example

Problem: **no output**

Output variables using
`std::cout`

```
    return 0;
}
```

Example

Problem: **no output**

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int main () {
    int n = 6;

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    return 0;
}
```

Example

Problem: **no output**

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int main () {
    int n = 6;

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    std::cout << prod << "\n";
    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Output:

-2118184960

Example

Problem: **no output**

```
int main () {
    int n = 6;

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    int prod = 1;
    for (int i = 1; 1 <= i && i < 13; ++i)
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}
```

Output:

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Problem: **no output**

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}
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Problem here

Example

Problem: **no output**

```cpp
#include <iostream>

int main () {
    int n = 6;

    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i && i < 13; ++i){
        prod *= n;
        std::cout << prod << "\n";
    }
    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Output `prod` in every iteration

Example

Problem: **no output**

```cpp
#include <iostream>

int main () {
    int n = 6;

    // Compute n^12
    int prod = 1;
    for (int i = 1; 1 <= i && i < 13; ++i){
        prod *= n;
        std::cout << prod << "\n";
    }
    // Output stars
    for (int i = 1; i < prod; ++i)
        std::cout << "*";

    std::cout << "\n";

    return 0;
}
```

Output:

```
6
36
216
1296
7776
46656
279936
1679616
10077696
60466176
362797056
-2118184960
```

Problem: **no output**

ut:

Problem: **Overflow**

6^{12} exceeds `int`.

6

76

362797056

-2118184960

```
                                    ...

    return 0;
}
```