Progess Report 8
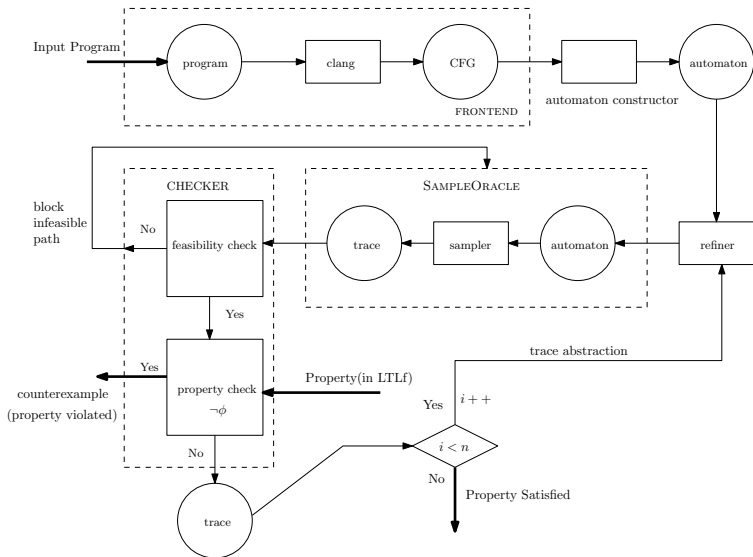
Xie Li

October 27, 2020

Overview of the Progress

- Run several cases and find some problems.
- Debugging of the tool.
- Other: prepare the talk, journal paper rectify and other project.

Flowgraph of the tool

Current problem

The meaningless of checking $\mathbf{G}\phi$ property. How to seperate the state?

Experiment on cases

Handcrafted and a few cases of SV-COMP.

```c
int x, y;

int main()
{

    x = 0;
    y = 0;

    // prevent overflow: x + y*(y+1)/2 <= 2^31-1
    if(!(x<=65534)) return 0;
    if(!(y<=65534)) return 0;
    // prevent underflow
    if(!(y>=-65534)) return 0;
    while (x >= 0) {
        x = x + y;
        y = y - 1;
    }
    return 0;
}
```

```c
int a;
int b;

int main()
{
    a = 1;
    b = 2;
    if (b < 10)
    {
        a = 2;
    }
    b = a;
    return 0;
}
```

Experiment on cases

```
int x;
int y;
int main()
{
    x = 1;
    y = 1;
    if (y >= 0) {
        while (x >= 0) {
            x = x - y;
        }
    }
    return 0;
}
```

```
int x, y;
int main()
    x = 1;
    y = 2;
    x = 6;
    x--;
    y = x;
    return 0;
}
```

```
int x, y;

int main()
{
    while(1)
    {
        x = 1;
        x = 6;
        y = 1;

        while(x > 0)
        {
            x--;
            if ( x <= 1)
                y = 0;
        }
    }
    return 0;
}
```

Later work

- Adapt the format of $\mathrm{SV\text{-}COMP}$. This require some work at the frontend and a more closer look at $\mathrm{SV\text{-}COMP}$.
- To conduct large scale experiment, the support of the interface needs to be more precise and robust.