GRAFIČKO I INTERAKTIVNO PRIKAZIVANJE IZLAZA VALGRIND-ovog ALATA MASSIF

https://github.com/MATF-Software-Verification/2020_05_Massif_Visual

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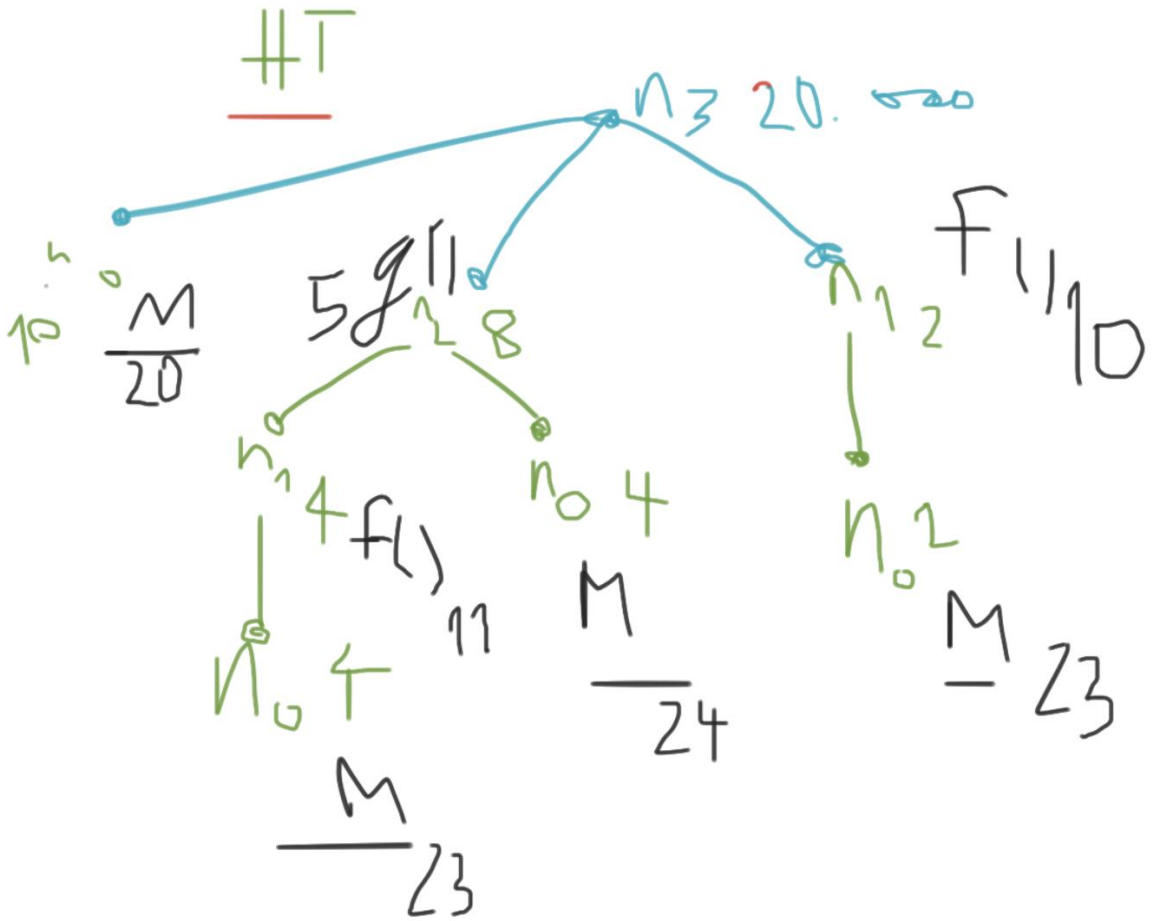
MOTIVACIJA

- Problem
- Zadatak
- Rezultat

GRUBA PODELA APLIKACIJE NA CELINE

- Parsiranje Massif izlaza
- Grafičko i interaktivno prikazivanje (chart, tree widget...)
- Korisničko okruženje i opcije u aplikaciji



PARSER

- **Prva diskusija**: ms_print izlaz ILI massif.out izvorni fajl iz Valgrind Massif
- **Druga diskusija**: šta znače linije u massif.out fajlovima
- **Treća diskusija**: razumevanje stabla hipa koje se pravi

```
desc: --time-unit=B
cmd: ./a.out
time_unit: B
#-----------
snapshot=0
#-----------
time=0
mem_heap_B=0
mem_heap_extra_B=0
mem_stacks_B=0
heap_tree=empty
#-----------
snapshot=1
#-----------
time=1016
mem_heap_B=1000
mem_heap_extra_B=16
mem_stacks_B=0
heap_tree=empty
#-----------
```

```
heap_tree=detailed
n1: 9000 (heap allocation functions) malloc/new/new[], --alloc-fns, etc.
 n0: 9000 0x1091A4: main (massif_example.c:20)
```

```
 #-----------
 snapshot=14
 #-----------
 time=20184
 mem_heap_B=20000
 mem_heap_extra_B=184
 mem_stacks_B=0
 heap_tree=peak
 n3: 20000 (heap allocation functions) malloc/new/new[], --alloc-fns, etc.
  n0: 10000 0x1091A4: main (massif_example.c:20)
  n2: 8000 0x109161: g (massif_example.c:5)
   n1: 4000 0x109177: f (massif_example.c:11)
    n0: 4000 0x1091C0: main (massif_example.c:23)
   n0: 4000 0x1091C5: main (massif_example.c:24)
  n1: 2000 0x109172: f (massif_example.c:10)
   n0: 2000 0x1091C0: main (massif_example.c:23)
```

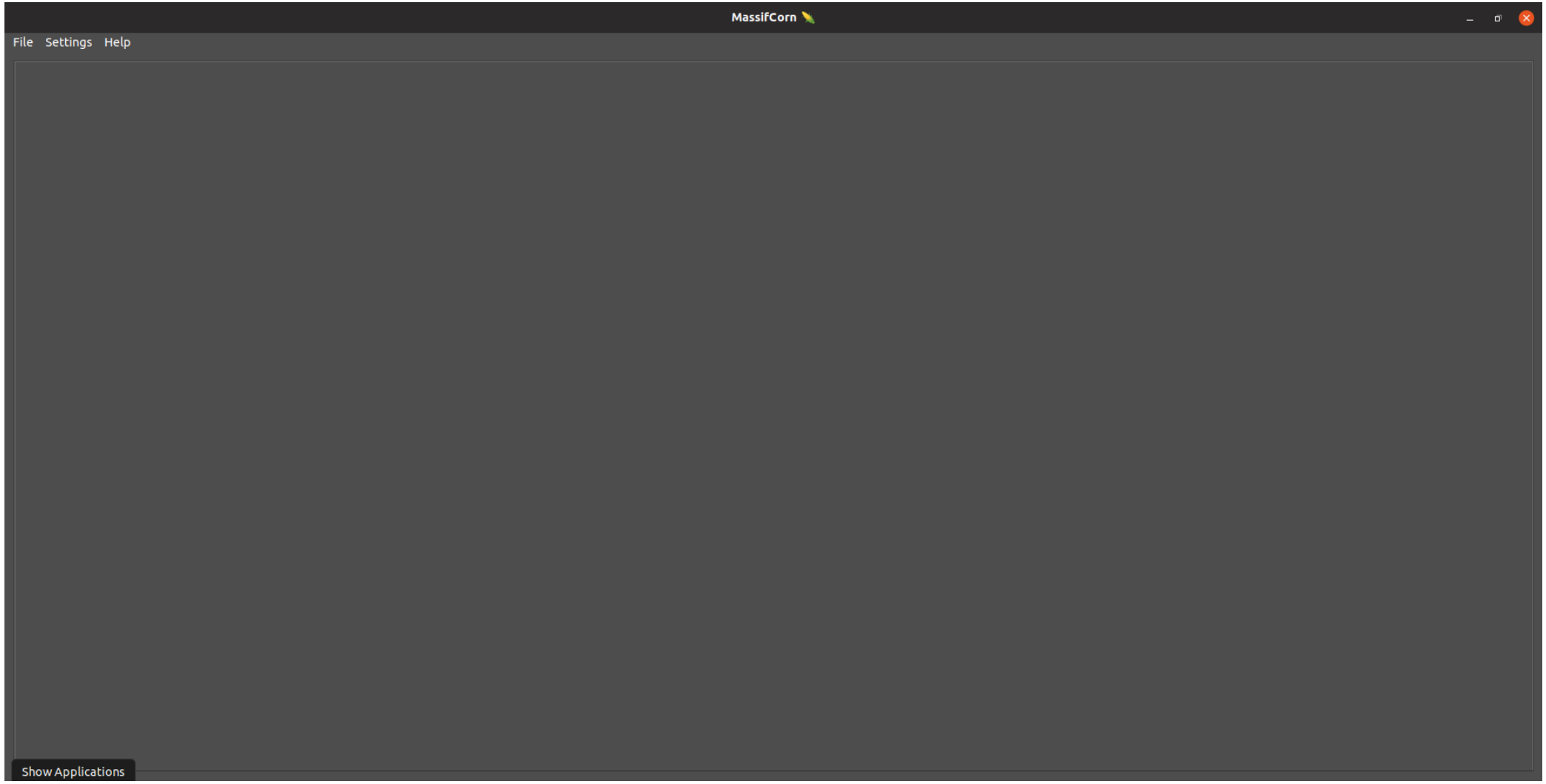
Struktura koda za parsiranje

- HeapTreeItem
- SnapshotItem
- ParserMassif

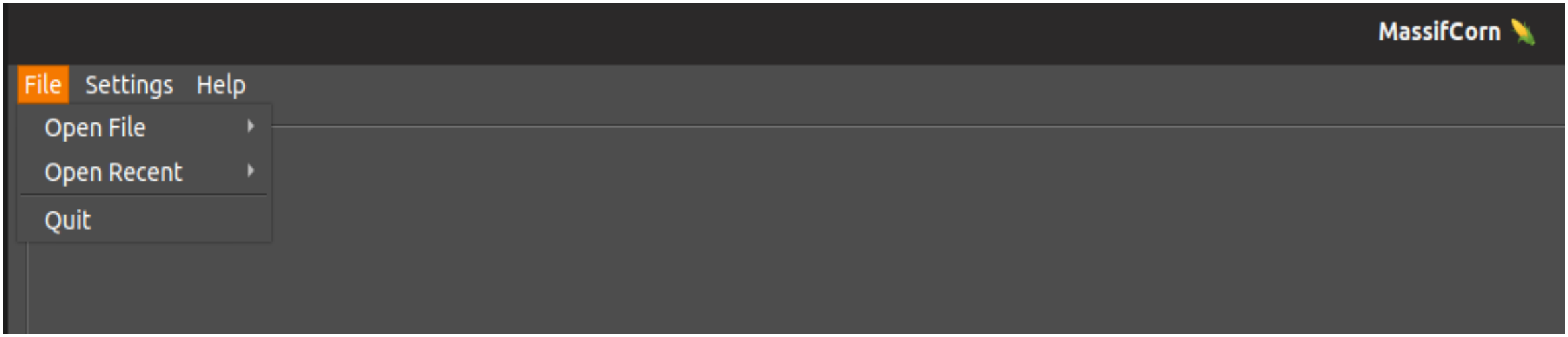
```
private:
    uint _numOfDirectChildren;
    quint64 _memoryAlloc;
    std::string _memoryAddr;
    std::string _fileName;
    std::string _funcName;
    uint _lineNum;
    std::vector<HeapTreeItem*> _children;
    HeapTreeItem* _mother;
    uint _indentation;
};
```

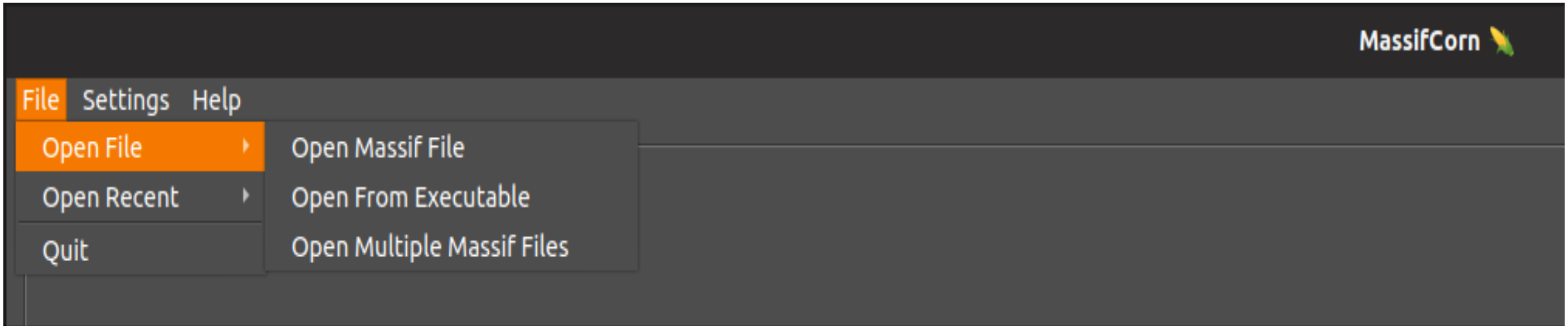
```
private:
    uint _snapshotNum;
    quint64 _time;
    //quint64 = unsigned long long int
    quint64 _memHeapB;
    quint64 _memHeapExtraB;
    quint64 _memStacksB;

    HeapTreeType _treeType;
    HeapTreeItem* _heapTreeItem;
```

```
private:
    std::string _inputFileName;
    std::map<std::string, std::string> _descArgs;
    std::string _exeFile;
    std::string _timeUnit;
    std::vector<SnapshotItem*> _snapshotItems;
    SnapshotItem* _peakSnapshot = nullptr;
```

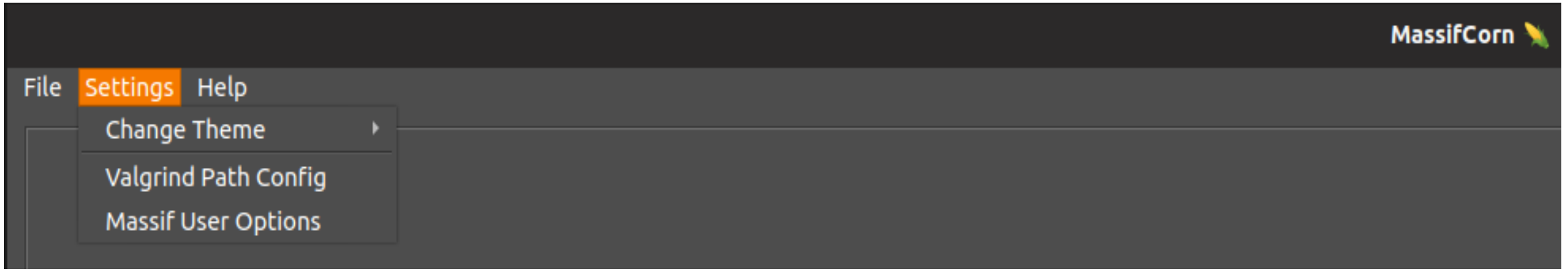


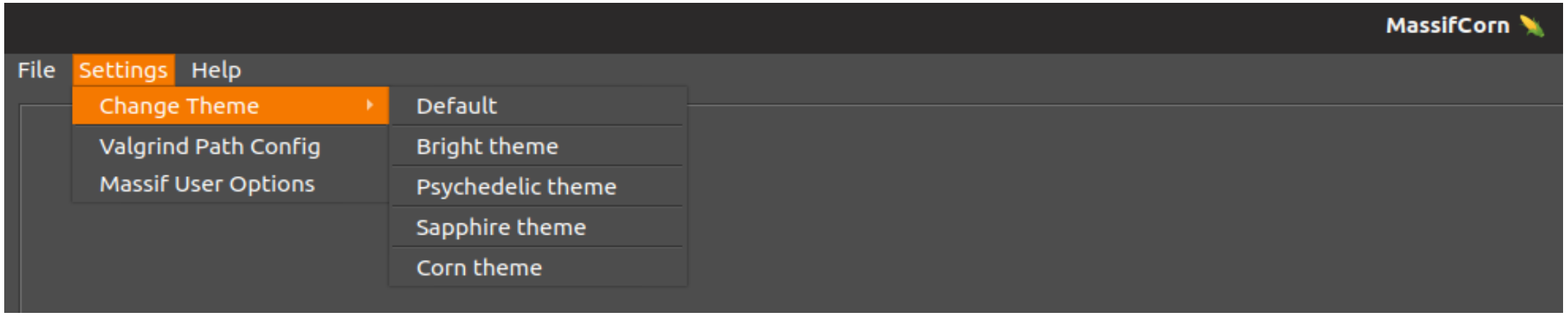
VIZUALIZACIJA

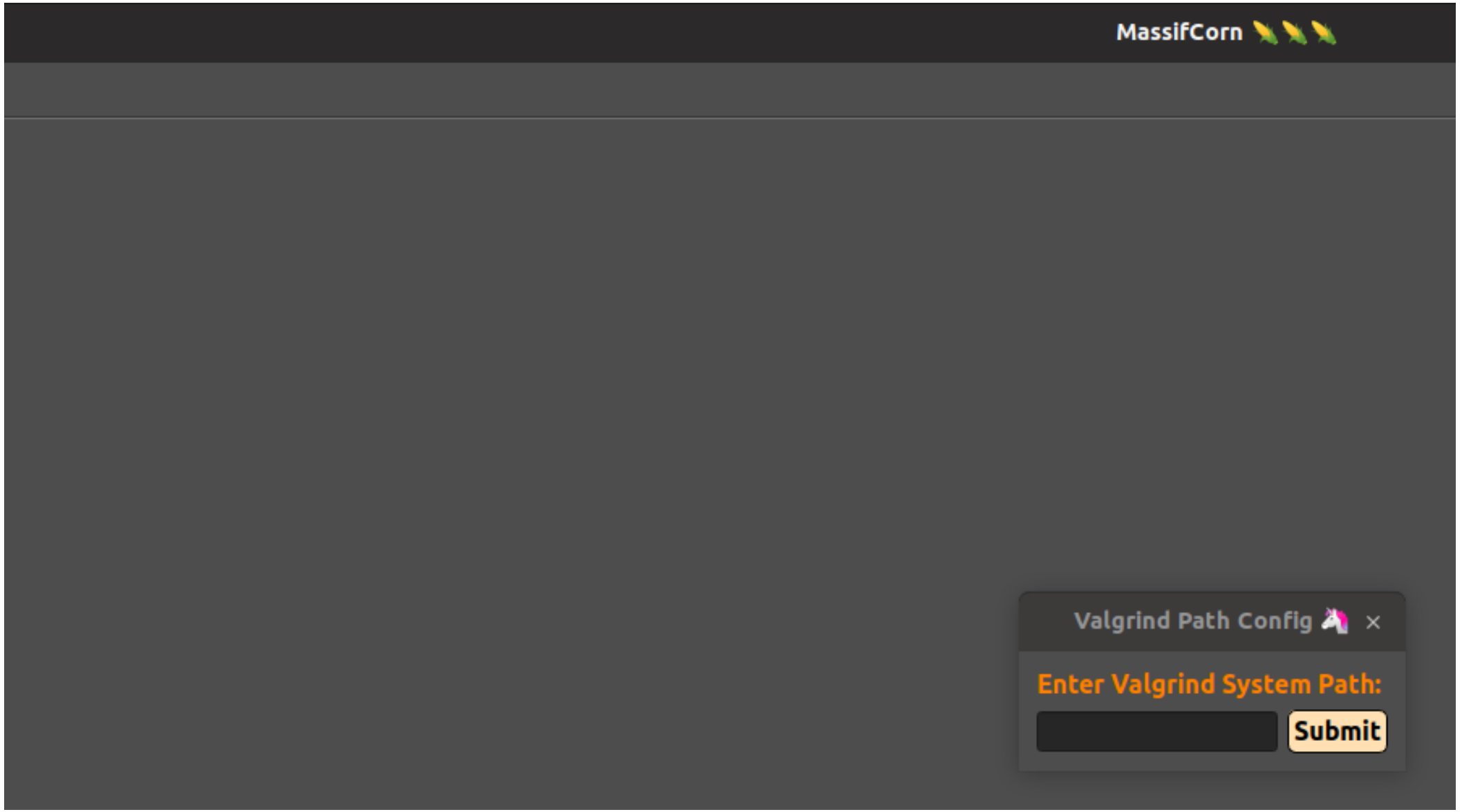

MassifCorn
File
Settings
Help
Open File
Open Recent
Quit

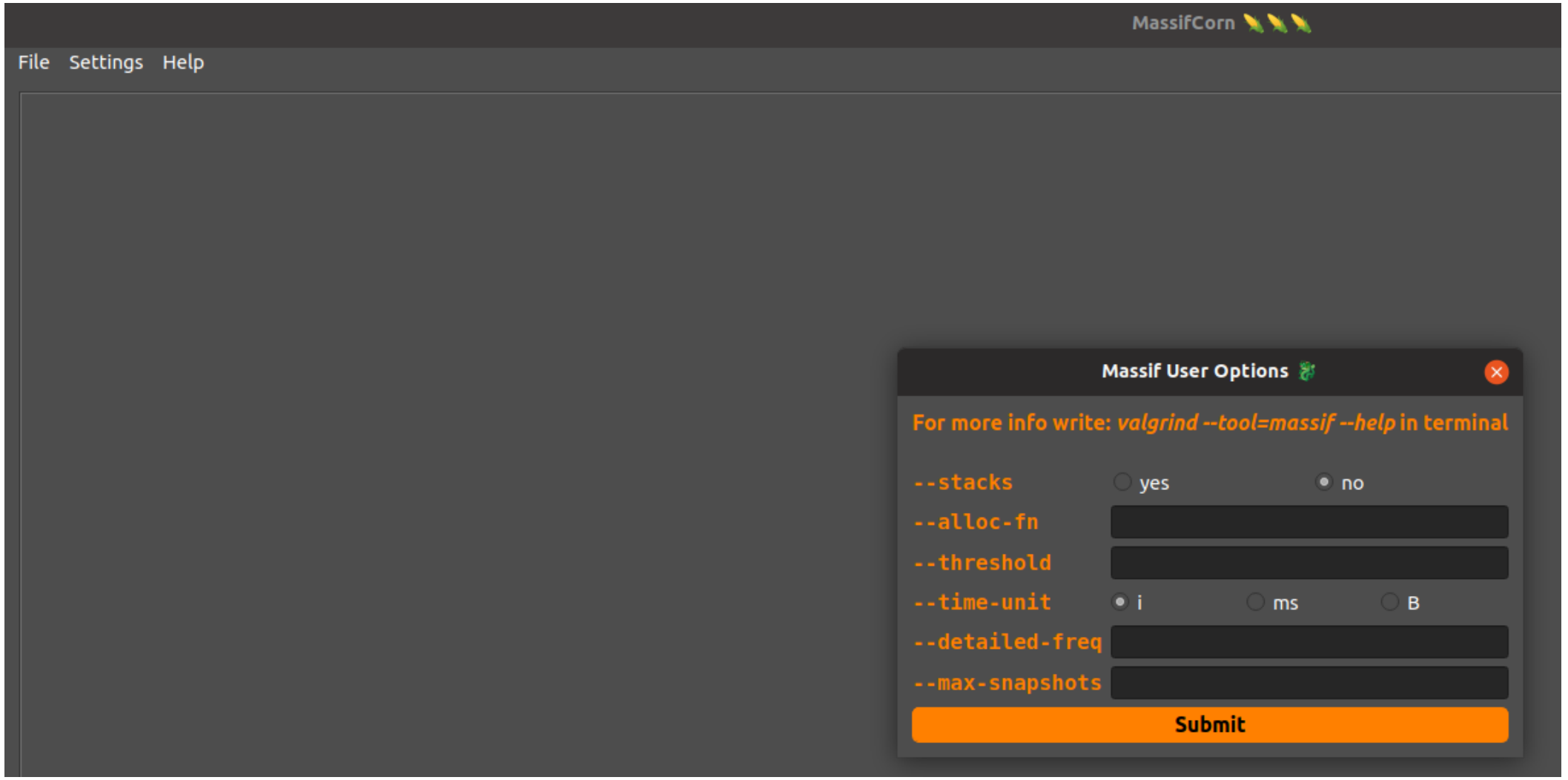

MassifCorn
File
Settings
Help
Open File
Open Recent
Quit
Open Massif File
Open From Executable
Open Multiple Massif Files


MassifCorn
File
Settings
Help
Open File
Open Recent
Quit
Clear recent files
/home/student/Desktop/massif.out.8122


MassifCorn
File
Settings
Help
Change Theme
Valgrind Path Config
Massif User Options


MassifCorn
File
Settings
Help
Change Theme
Valgrind Path Config
Massif User Options
Default
Bright theme
Psychedelic theme
Sapphire theme
Corn theme


MassifCorn
Valgrind Path Config
Enter Valgrind System Path:
Submit

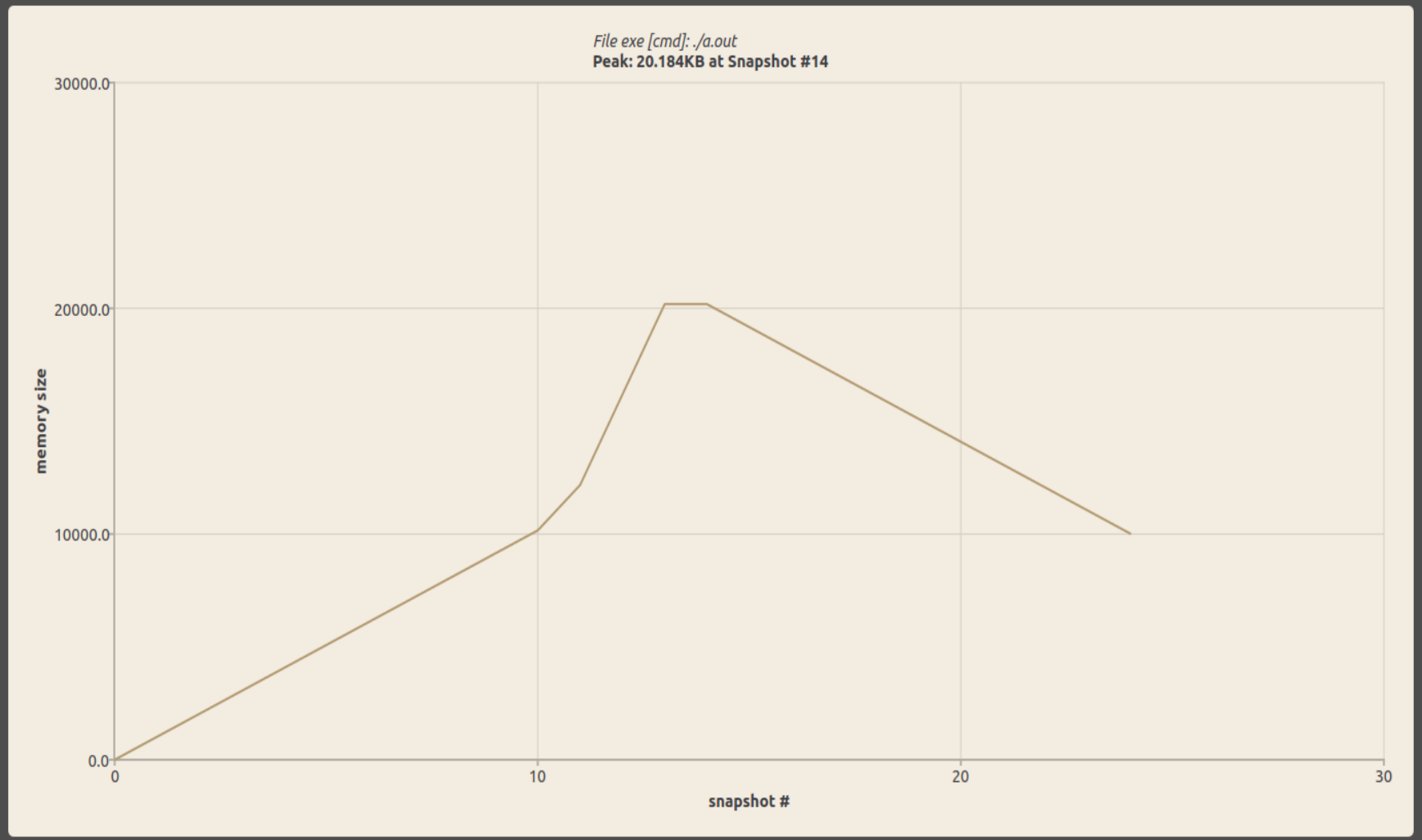

MassifCorn
File
Settings
Help
Massif User Options
For more info write: valgrind --tool=massif --help in terminal
--stacks
yes
no
--alloc-fn
--threshold
--time-unit
i
ms
B
--detailed-freq
--max-snapshots
Submit

MassifCorn

File Settings Help

massif.out.8122

Time unit on x-axis



MIN X Axis: MAX X Axis: submit

snapshot 0
snapshot 1
snapshot 2
snapshot 3
snapshot 4
snapshot 5
snapshot 6
snapshot 7
snapshot 8
snapshot 9
n1: 9000
n0: 9000 main
snapshot 10
snapshot 11
snapshot 12
snapshot 13
snapshot 14
snapshot 15
snapshot 16
snapshot 17
snapshot 18
snapshot 19
snapshot 20

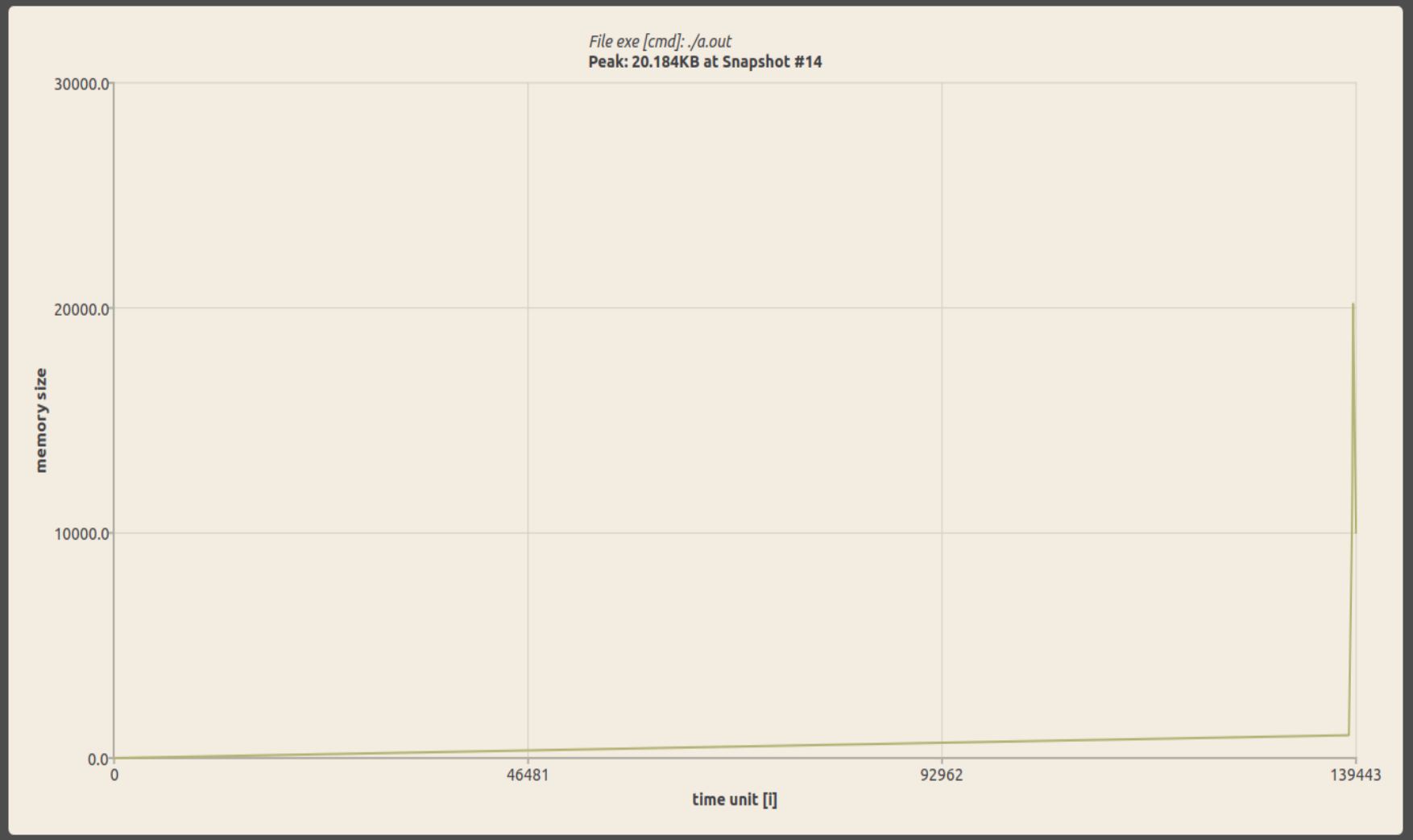
```
1  #include
2
3  void g(void)
4  {
5    malloc(4000);
6  }
7
8  void f(void)
9  {
10   malloc(2000);
11   g();
12 }
13
14 int main(void)
15 {
16   int i;
17   int* a[10];
18
19   for (i = 0; i
20     a[i] = malloc(1000);
21   }
22
23   f();
24   g();
25
26   for (i = 0; i
27     free(a[i]);
28   }
29
30   return 0;
31 }
```

MassifCorn

File Settings Help

massif.out.8122

Time unit on x-axis



snapshot 0
snapshot 1
snapshot 2
snapshot 3
snapshot 4
snapshot 5
snapshot 6
snapshot 7
snapshot 8
snapshot 9
snapshot 10
snapshot 11
snapshot 12
snapshot 13
snapshot 14
snapshot 15
snapshot 16
snapshot 17
snapshot 18
snapshot 19
snapshot 20
snapshot 21
snapshot 22
snapshot 23

MIN X Axis:

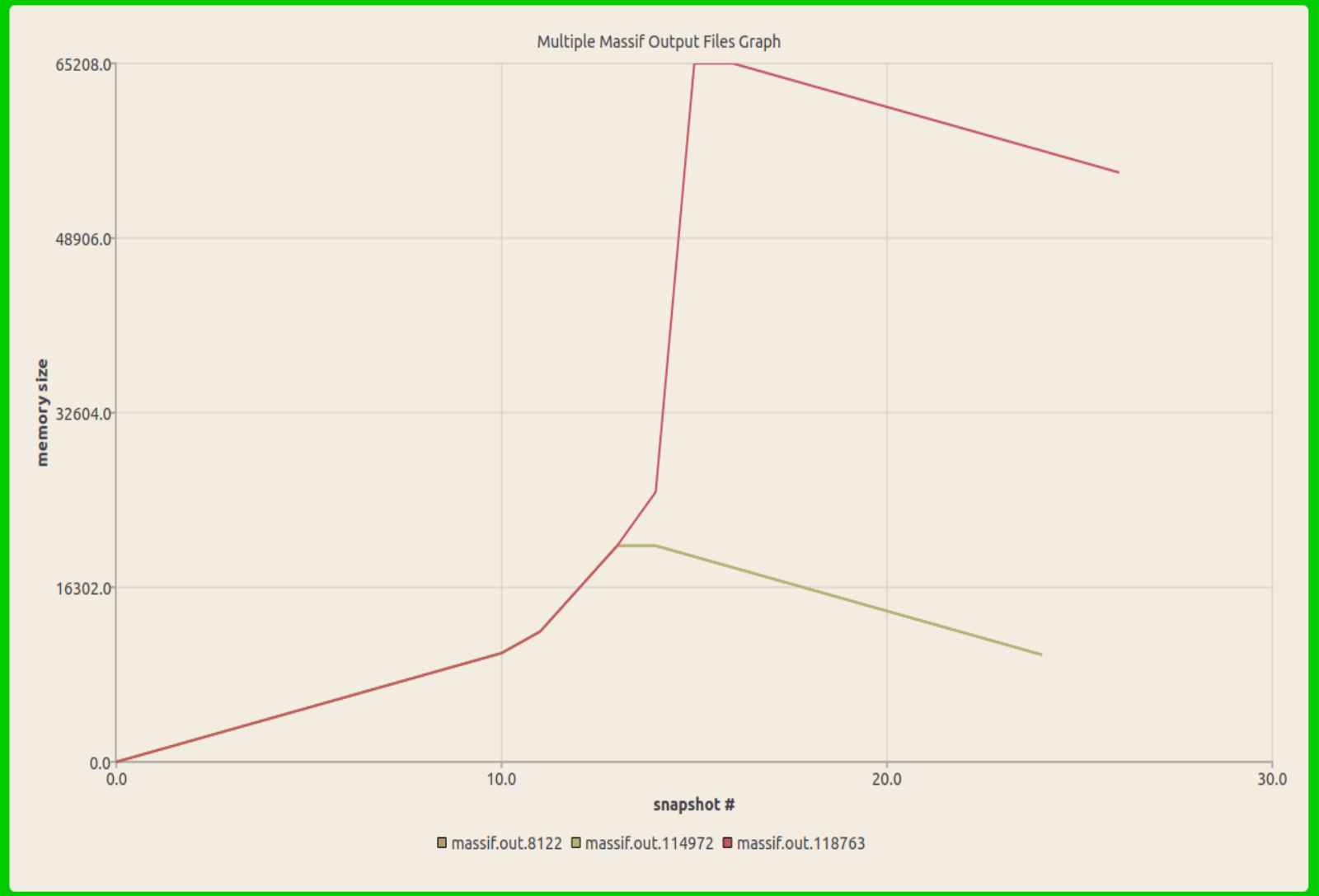
MAX X Axis:

submit

MassifCorn

File Settings Help

massif.out.8122 | Multiple Graphs



MIN X Axis: MAX X Axis: submit

peak 14 massif.out.8122

- n3: 20000
- n0: 10000 main
- n2: 8000 g
- n1: 4000 f
- n0: 4000 main
- n0: 4000 main
- n1: 2000 f
- n0: 2000 main

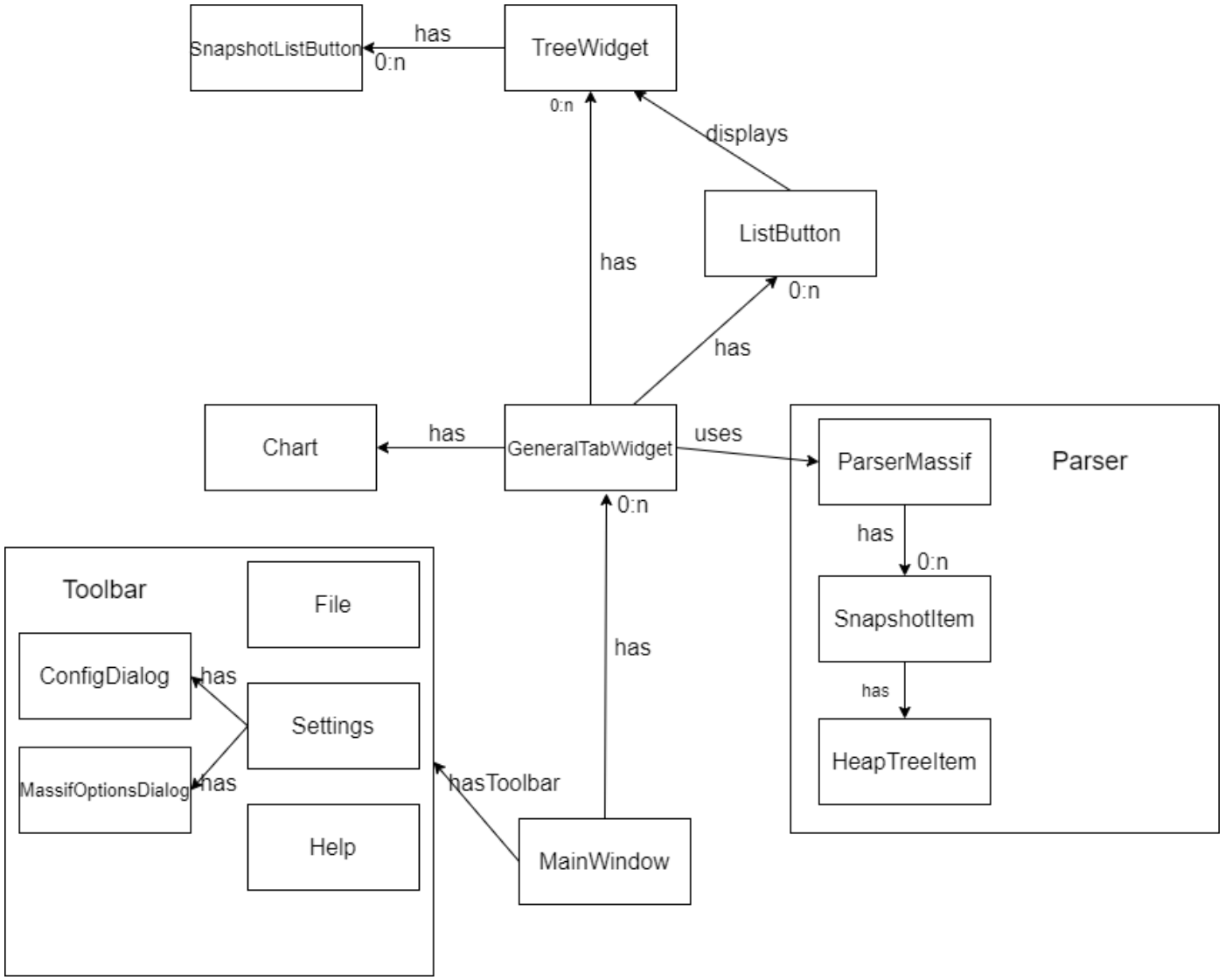
peak 14 massif.out.114972

- n3: 20000
- n0: 10000 main
- n2: 8000 g
- n1: 4000 f
- n0: 4000 main
- n0: 4000 main
- n1: 2000 f
- n0: 2000 main

peak 16 massif.out.118763

- n5: 65000
- n1: 40000 aca
- n1: 40000 beka
- n0: 40000 main
- n0: 10000 main
- n2: 8000 g
- n1: 4000 f

```
1  #include
2
3  void g(void)
4  {
5    malloc(4000);
6  }
7
8  void f(void)
9  {
10   malloc(2000);
11   g();
12 }
13
14 int main(void)
15 {
16   int i;
17   int* a[10];
18
19   for (i = 0; i
20     a[i] = malloc(1000);
21   }
22
23   f();
24   g();
25
26   for (i = 0; i
27     free(a[i]);
28   }
29
30   return 0;
31 }
```


SnapshotListButton
has
0:n
TreeWidget
0:n
displays
ListButton
has
0:n
has
Chart
has
GeneralTabWidget
uses
0:n
ParserMassif
Parser
has
0:n
SnapshotItem
has
HeapTreeItem
Toolbar
File
ConfigDialog
has
Settings
MassifOptionsDialog
has
Help
hasToolbar
has
MainWindow

Dijagram

PRIKAZ APLIKACIJE...