

PERFORMANCE ANALYSIS

Software analysis

Computer characteristics

- Computer: 11A001E424171461.
- Operative system: Windows
- Version: 10.
- Processor: Intel64 Family 6 Model 60 Stepping 3, GenuineIntel
- CPU: Intel(R) Core(TM) i5-4570 CPU @ 3.20GHz

The process took 0.868000 seconds to execute

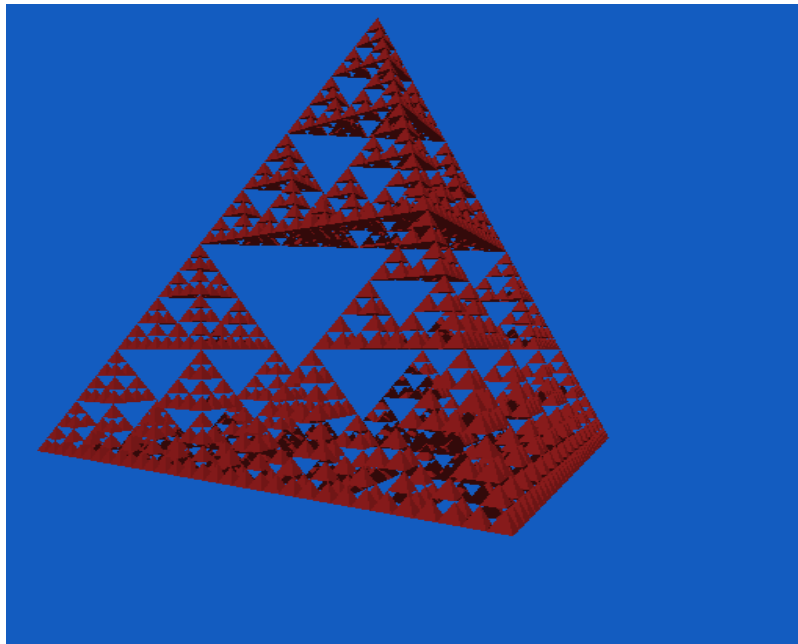


Table 1

This table gives us the following information:

- time: the percentage of the total running time of the program used by this function.
- Accumulative seconds: a running sum of the number of seconds accounted for by this function and those listed above it.
- Self seconds: the number of seconds accounted for by this function alone. This is the major sort for this listing.
- Calls: the number of times this function was invoked, if this function is profiled, else blank.
- Self ms/call: the average number of milliseconds spent in this ms/call function per call, if this function is profiled, else blank.
- total ms/call: the average number of milliseconds spent in this function and its descendents per call, if this function is profiled, else blank.
- Name: the name of the function.

Each sample counts as 0.01 seconds.

Time	Accumulative seconds	Self seconds	calls	ms/call	ms/call	name
0.00	0.29	0.00	1.0	0.0	290.0	RayTracer
0.00	0.29	0.00	915850.0	0.0	0.0	Intersection test
0.00	0.29	0.00	2182817.0	0.0	0.0	Vector +
0.00	0.29	0.00	2468060.0	0.0	0.0	Vector -
0.00	0.29	0.00	2.0	0.0	0.0	Vector cross

Time	Accumulative seconds	Self seconds	calls	ms/call	ms/call	name
3.45	0.25	0.01	3094536.0	0.0	0.0	Vector dotPoint
0.00	0.29	0.00	1852283.0	0.0	0.0	Vector normalize
10.34	0.11	0.03	3119731.0	0.0	0.0	Vector scale
0.00	0.29	0.00	2534998.0	0.0	0.0	SQRT
0.00	0.29	0.00	1.0	0.0	0.0	Primary ray info
13.79	0.08	0.04	915850.0	0.0	0.0	Sphere Intersection test

To get a better understanding, some table columns were graphed

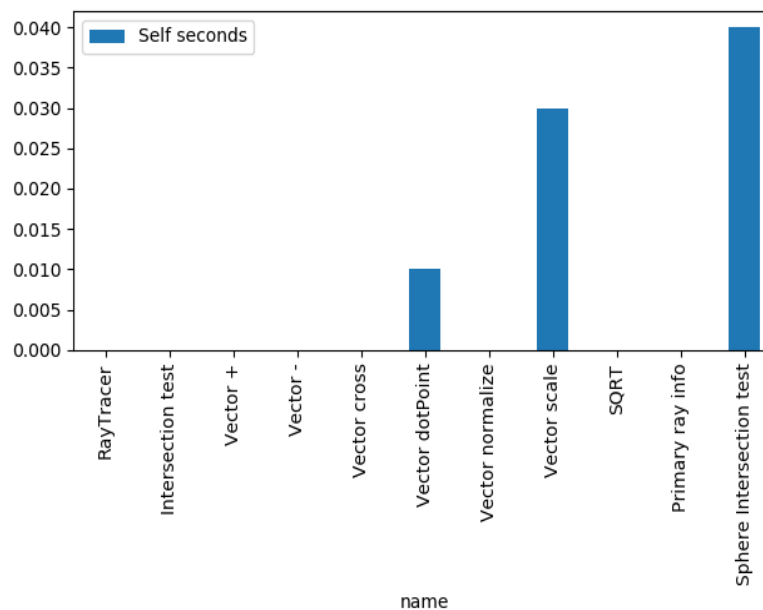
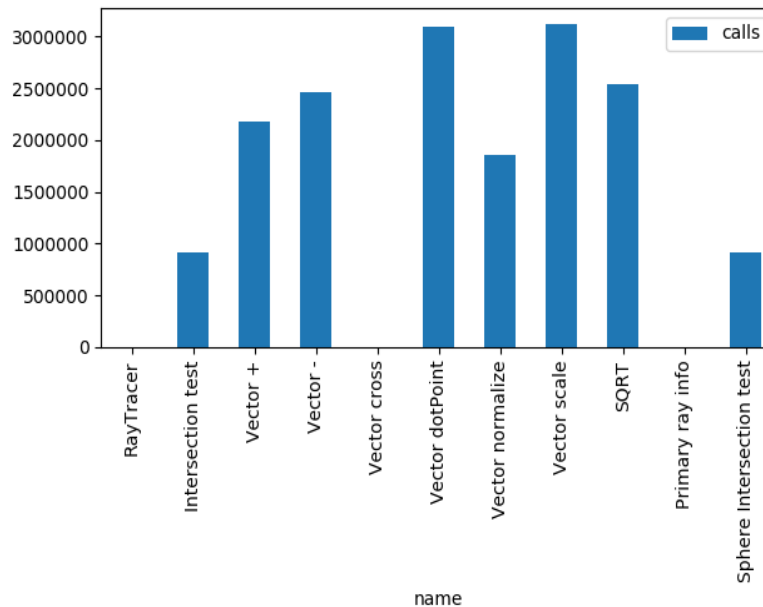


Table 2

This table describes the call tree of the program, and was sorted by the total amount of time spent in each function and its children. Each entry in this table consists of several lines. The line with the index number at the left hand margin lists the current function. The lines above it list the functions that called this function, and the lines below it list the functions this one called. This line lists:

- index: A unique number given to each element of the table. Index numbers are sorted numerically. The index number is printed next to every function name so it is easier to look up where the function is in the table.
- time: This is the percentage of the 'total' time that was spent in this function and its children. Note that due to different viewpoints, functions excluded by options, etc, these numbers will NOT add up to 100%.
- self: This is the total amount of time spent in this function.

- children: This is the total amount of time propagated into this function by its children.
- called: This is the number of times the function was called. If the function called itself recursively, the number only includes non-recursive calls, and is followed by a '+' and the number of recursive calls.
- total ms/call: the average number of milliseconds spent in this function and its descendents per call, if this function is profiled, else blank.
- total ms/call: the average number of milliseconds spent in this function and its descendents per call, if this function is profiled, else blank.
- Name: the name of the function.

For the function's parents, the fields have the following meanings:

- self This is the amount of time that was propagated directly from the function into this parent.
- children This is the amount of time that was propagated from the function's children into this parent.
- called This is the number of times this parent called the function '/' the total number of times the function was called. Recursive calls to the function are not included in the number after the '/'.
- name This is the name of the parent. The parent's index number is printed after it. If the parent is a member of a cycle, the cycle number is printed between the name and the index number.

Table 2.1

index	%time	self	children	called	name
[1]	100.0	0.00	0.29	1	RayTracer
		0.03	0.21	307200/307200	RayTracer::shading(Ray, Primitive*, int, int) <cycle 1>
		0.00	0.03	307200/915850	Intersection test
		0.00	0.01	307200/586693	Ray::Ray(Vector, Vector)
		0.00	0.00	307680/3119731	Vector scale
		0.00	0.00	307200/1831700	Ray::Ray(Ray const&)
		0.00	0.00	307200/2468060	Vector -
		0.00	0.00	307200/2182817	Vector +
		0.00	0.00	307200/8754843	Vector::Vector(Vector const&)
		0.00	0.00	2/8900985	Vector::Vector()
		0.00	0.00	307200/307200	Color::operator*(float const&) const

Table 2.2

index	%time	self	children	called	name
		0.00	0.00	307200/307200	Color::operator*(float const&) const
[2]	100.0	0.00	0.29		_fu3___ZSt4cout
		0.00	0.29	1/1	RayTracer
		0.00	0.00	1/1	RayTracer::~~RayTracer()

Table 2.3

index	%time	self	children	called	name
[3]	82.1	0.03	0.21		307200+937807 <cycle 1 as a whole>
		0.00	0.18	329157	RayTracer::fullScale(Vector, Vector, Vector, Primitive*, int) <cycle 1>
		0.02	0.03	329157	RayTracer::colorContribution(Primitive*, Ray, int, int) <cycle 1>
		0.01	0.00	586693	RayTracer::shading(Ray, Primitive*, int, int) <cycle 1>

Table 2.4

index	% time	self	children	called	name
		329157	RayTracer::colorContribution(Primitive*,	Ray,	int, int) <cycle 1>
[4]	61.6	0.00	0.18	329157	RayTracer::fullScale(Vector, Vector, Vector, Primitive*, int) <cycle 1>
		0.00	0.06	608650/915850	Intersection test
		0.02	0.01	1823198/3119731	Vector scale
		0.00	0.02	936431/1852283	Vector normalize
		0.00	0.02	329157/329157	std::vector<Light, std::allocator<Light> >::vector(std::vector<Light, std::allocator<Light> > const&)
		0.00	0.01	279493/586693	Ray::Ray(Vector, Vector)
		0.01	0.00	329157/329157	__gnu_cxx::__enable_if<std::__is_integer<unsigned int>::__value, double>::__type std::sqrt<unsigned int> (unsigned int)
		0.00	0.01	329157/329157	Ray::Ray(Vector, Vector, float)
		0.01	0.00	3138450/8754843	Vector::Vector(Vector const&)
		0.01	0.00	329157/987485	Color::Color()
		0.00	0.01	1215924/2182817	Vector +
		0.00	0.00	1262836/3094536	Vector dotPoint
		0.00	0.00	329157/1245008	Vector::Vector(Vector, Vector)
		0.00	0.00	279493/1831700	Ray::Ray(Ray const&)
		0.00	0.00	329157/8900985	Vector::Vector()
		0.00	0.00	987471/1316633	std::vector<Light, std::allocator<Light> >::size() const
		0.00	0.00	655562/655562	__gnu_cxx::__promote_2<int, float, __gnu_cxx::__promote<int, std::__is_integer<int>::__value>::__type, __gnu_cxx::__promote<float, std::__is_integer<float>::__value>::__type>::__type std::fmax<int, float>(int, float)
		0.00	0.00	329157/1173388	Color::Color(Color const&)
		0.00	0.00	329157/329157	std::vector<Light, std::allocator<Light> >::operator[](unsigned int)
		0.00	0.00	329157/329159	std::vector<Light, std::allocator<Light> >::~~vector()
		0.00	0.00	327781/327781	__gnu_cxx::__promote_2<double, float, __gnu_cxx::__promote<double, std::__is_integer<double>::__value>::__type, __gnu_cxx::__promote<float, std::__is_integer<float>::__value>::__type>::__type std::pow<double, float>(double, float)
		279493	RayTracer::shading(Ray,	Primitive*,	int, int) <cycle 1>

Table 2.5

index	%time	self	children	called	name
		0.00	0.03	307200/915850	RayTracer
		0.00	0.06	608650/915850	RayTracer::fullScale(Vector, Vector, Vector, Primitive*, int) <cycle 1>
[5]	29.7	0.00	0.09	915850	Intersection test
		0.04	0.02	915850/915850	Sphere Intersection test
		0.02	0.00	1831700/1831705	std::vector<Primitive*, std::allocator<Primitive*> >::size() const
		0.00	0.01	915850/1831700	Ray::Ray(Ray const&)
		0.00	0.00	915850/915850	std::vector<Primitive*, std::allocator<Primitive*> >::operator[](unsigned int)

Table 2.6

index	% time	self	children	called	name
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index	%time	self	children	called	name
		0.04	0.02	915850/915850	Intersection test
[6]	20.6	0.04	0.02	915850	Sphere Intersection test
		0.00	0.01	330533/659690	Ray::setP()
		0.01	0.00	1831700/3094536	Vector dotPoint
		0.00	0.00	1831700/8754843	Vector::Vector(Vector const&)
		0.00	0.00	915850/2468060	Vector -
		0.00	0.00	682715/2534998	SQRT