Optional Assignment 2

SPEC

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Installing SPEC benchmark

- Download the ISO using the command `scp “aos@192.168.1.161:cpu2017-1_0_5.iso .”.`
- Mount the ISO file at /mnt directory using the command: `sudo mount <iosname>.iso /mnt.`
- Run the installation script: `./install.sh` and put in the path where you want it to be installed

Running SPEC benchmark

- Install the package gfortran using command: `sudo apt install gfortran`
- Edit the config file <install directory>/config/**Example-gcc-x86.** Correct the path of the **gcc** compiler, number of cores and thread and data about the machine.
- Use command `source shrc` to put the command into the path. Use this command from the <install directory>
- Run the command: `runcpu –config=Manav2-gcc-linux-x86.cfg intrate fprate –size=ref` to start integer and float benchmark for the gcc compiler.
- Make another copy of the config file. Replace the compiler from gcc to clang and g++ to clang++. And change the optimise flags to “`OPTIMIZE = -g -fPIC -O3 -march=native -fno-unsafe-math-optimizations #-fno-tree-loop-vectorize”.` In the config file.
- Run the command: `runcpu –config=Manav2-clang-linux-x86.cfg intrate fprate –size=ref` to start integer and float benchmark for the clang compiler.

Integer Benchmarks

GCC

Benchmarks	Base Copies	Estimated Base Run Time	Base Rate
500.perlbench_r	1	296	5.39
502.gcc_r	1	206	6.88
505.mcf_r	1	316	5.11

```
520.omnetpp_r         1        395       3.32
523.xalancbmk_r       1        317       3.33
525.x264_r            1        356       4.92
531.deepsjeng_r       1        282       4.07
541.leela_r           1        449       3.69
548.exchange2_r       1        251      10.4
557.xz_r              1        338       3.20
==============================================
500.perlbench_r       1        296       5.39
502.gcc_r             1        206       6.88
505.mcf_r             1        316       5.11
520.omnetpp_r         1        395       3.32
523.xalancbmk_r       1        317       3.33
525.x264_r            1        356       4.92
531.deepsjeng_r       1        282       4.07
541.leela_r           1        449       3.69
548.exchange2_r       1        251      10.4
557.xz_r              1        338       3.20
 Est. SPECrate2017_int_base             4.69
```

Clang

```
                      Estimated
                Base     Base        Base
Benchmarks      Copies  Run Time     Rate
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500.perlbench_r       1        315       5.05
502.gcc_r             1        209       6.78
505.mcf_r             1        306       5.28
520.omnetpp_r         1        346       3.79
523.xalancbmk_r       1        269       3.93
525.x264_r            1        230       7.60
531.deepsjeng_r       1        277       4.14
541.leela_r           1        470       3.52
548.exchange2_r       1        346       7.58
557.xz_r              1        316       3.42
==============================================
```

500.perlbench_r	1	315	5.05
502.gcc_r	1	209	6.78
505.mcf_r	1	306	5.28
520.omnetpp_r	1	346	3.79
523.xalancbmk_r	1	269	3.93
525.x264_r	1	230	7.60
531.deepsjeng_r	1	277	4.14
541.leela_r	1	470	3.52
548.exchange2_r	1	346	7.58
557.xz_r	1	316	3.42
Est. SPECrate2017_int_base			4.88

Floating Point Benchmarks

GCC

Benchmarks	Base Copies	Estimated Base Run Time	Base Rate
503.bwaves_r	1	431	23.2
507.cactuBSSN_r	1	224	5.64
508.namd_r	1	196	4.85
510.parest_r	1	456	5.74
511.povray_r	1	335	6.98
519.lbm_r	1	214	4.93
521.wrf_r	1	544	4.12
526.blender_r	1	262	5.81
527.cam4_r	1	244	7.18
538.imagick_r	1	393	6.34
544.nab_r	1	299	5.63
549.fotonik3d_r	1	439	8.87
554.roms_r	1	288	5.53
503.bwaves_r	1	431	23.2
507.cactuBSSN_r	1	224	5.64
508.namd_r	1	196	4.85
510.parest_r	1	456	5.74

511.povray_r	1	335	6.98
519.lbm_r	1	214	4.93
521.wrf_r	1	544	4.12
526.blender_r	1	262	5.81
527.cam4_r	1	244	7.18
538.imagick_r	1	393	6.34
544.nab_r	1	299	5.63
549.fotonik3d_r	1	439	8.87
554.roms_r	1	288	5.53
Est. SPECrate2017_fp_base			6.51

Clang

Benchmarks	Base Copies	Estimated Base Run Time	Base Rate
503.bwaves_r	1	384	26.1
507.cactuBSSN_r	1	211	5.99
508.namd_r	1	201	4.72
510.parest_r	1	405	6.46
511.povray_r	1	357	6.53
519.lbm_r	1	204	5.17
521.wrf_r	1	343	6.53
526.blender_r	1	248	6.15
527.cam4_r	1	223	7.83
538.imagick_r	1	324	7.69
544.nab_r	1	277	6.08
549.fotonik3d_r	1	391	9.96
554.roms_r	1	215	7.38
503.bwaves_r	1	384	26.1
507.cactuBSSN_r	1	211	5.99
508.namd_r	1	201	4.72
510.parest_r	1	405	6.46
511.povray_r	1	357	6.53
519.lbm_r	1	204	5.17

521.wrf_r	1	343	6.53
526.blender_r	1	248	6.15
527.cam4_r	1	223	7.83
538.imagick_r	1	324	7.69
544.nab_r	1	277	6.08
549.fotonik3d_r	1	391	9.96
554.roms_r	1	215	7.38
Est. SPECrate2017_fp_base			7.32