Judging Details

Judge System

Your programs will be run inside a *sandboxed environment*, i.e. with protections to prevent the system from being damaged. Specifically:

- Memory usage is limited to 2 GB in the environment. Note it is the total amount, not the amount you can use exclusively in your programs.
- The stack size is set unlimited (in C/C++), only capped by the total memory limit.
- Multi-processing or multi-threading is discouraged and unlikely beneficial, though not prohibited. Remember your programs will run on a single core of processor. The total number of processes is limited to 15, including ones the system may create outside your programs.
- It is *never* recommended to run external commands. It is technically possible but probably does not work as you expect.

If you have no idea about what these mean — no worries. Just remember your programs should use the standard input and output, not files. Everything else should be unrelated to you.

There are a couple more restrictions that apply:

- The total amount of source code must not exceed 256 KB in each submission.
- Your program must compile within 30 seconds.

See the DOMjudge team manual for more details about these restrictions.

Note about Platform

The judge system is running on Google Compute Engine, C2 machine type (`c2-standard-4`). For more information about Google Compute Engine, please visit

https://cloud.google.com/compute/docs/cpu-platforms

Compilers & Options

The judge system uses the following compilers and options to compile and run your programs.

`"$@"` is substituted with your source file(s); `"$DEST"` is the name of the binary (which is “`./a.out`” by default) and is chosen arbitrarily by the system.

C	
Version	gcc (Debian 8.3.0-6) 8.3.0
Compile	gcc -g -O2 -std=gnu11 -static -o "$DEST" "$@" -lm
Run	"$DEST" < *infile* > *outfile*
C++	
Version	g++ (Debian 8.3.0-6) 8.3.0
Compile	g++ -g -O2 -std=gnu++17 -static -o "$DEST" "$@"
Run	"$DEST" < *infile* > *outfile*
Java	
Version	OpenJDK: "11.0.9+11-post-Debian-1deb10u1"
Compile	javac -encoding UTF-8 -sourcepath . -d . "$@"
Run[1]	java -Dfile.encoding=UTF-8 -XX:+UseSerialGC -Xss64m -Xms1920m -Xmx1920m *MainClass* < *infile* > *outfile*
Python 3 (PyPy)	
Version	Python 3.5.3 (7.0.0+dfsg-3, Feb 21 2019, 03:51:22) [PyPy 7.0.0 with GCC 8.2.0] on linux
Compile[2]	pypy3 -m py_compile "$@"
Run	pypy3 "$@" < *infile* > *outfile*
Kotlin	
Version	kotlinc-jvm 1.3.50
Compile	kotlinc -d . "$@"
Run[2]	kotlin -Dfile.encoding=UTF-8 -J-XX:+UseSerialGC -J-Xss64m -J-Xms1920m -J-Xmx1920m *MainClass* < *infile* > *outfile*

[1] DOMjudge will detect the main class automatically; you do not have to name it `Main`. See the DOMjudge team manual for details.

[2] Python’s “Compile” commands only verify the syntax. `*.pyc` files will *not* be used in the real run.

Submission Results

Your submissions will eventually be responded with one of the following results:

Accepted

- **CORRECT** — Your program ran successfully and passed all test cases.

Rejected with 20-minute penalty

- **WRONG-ANSWER** — Your program neither crashed nor exceeded the time limit, but produced incorrect output for some test case(s).
- **NO-OUTPUT** — Your program did not produce any output for some test case(s).
- **TIMELIMIT** — Your program did not finish within the time limit for some test case.
- **RUN-ERROR** — Your program crashed with some test case or otherwise exited with a non-zero exit status (e.g. because of missing "`return 0;`" in C/C++).
- **OUTPUT-LIMIT** — Your program produced excessive output (> 4 MB) for some test case.

Rejected with no penalty

- **COMPILE-ERROR** — Your program did not compile on the judging environment. You can consult error message(s) on the submission details page.
- **TOO-LATE** — Your program was submitted after the contest was over.[3]

Note to Python Users

The judges have solved all problems in C++ and Java, but not necessarily in Python. They do not guarantee that all problems can be solved in Python.

Only syntax errors will be reported as **COMPILE-ERROR**. Other types of errors, such as `NameError` or `ModuleNotFoundError`, will result in **RUN-ERROR** and incur a 20-minute penalty.

It is fine, though not needed, to start your scripts with an interpreter directive (line starting with "`#!`", also known as *shebang*).[4]

The full list of modules available in the judge system can be found in the following pages.

[3] Note it does not mean your programs need to be *judged* before the end of the contest. Your programs will be judged as long as submitted ("*queued*") within the contest time.

[4] Some past versions of DOMjudge refused scripts that contain a shebang.

Available Python Modules

```
__future__          aifc                hmac                sched
_ast                antigravity         html                secrets
_asyncio            appdirs             html5lib            select
_bisect             argparse            http                selectors
_blake2             array               idna                setuptools
_bootlocale         ast                 imaplib             shelve
_bz2                asynchat            imghdr              shlex
_codecs             asyncio             imp                 shutil
_codecs_cn          asyncore            importlib           signal
_codecs_hk          atexit              inspect             site
_codecs_iso2022     audioop             io                  sitecustomize
_codecs_jp          base64              ipaddress           six
_codecs_kr          bdb                 itertools           smtpd
_codecs_tw          binascii            json                smtplib
_collections        binhex              keyword             sndhdr
_collections_abc    bisect              lib2to3             socket
_compat_pickle      builtins            linecache           socketserver
_compression        bz2                 locale              spwd
_crypt              cProfile            lockfile            sqlite3
_csv                cachecontrol        logging             sre_compile
_ctypes             calendar            lzma                sre_constants
_ctypes_test        cgi                 macpath             sre_parse
_curses             cgitb               macurl2path         ssl
_curses_panel       chardet             mailbox             stat
_datetime           chunk               mailcap             statistics
_dbm                cmath               marshal             string
_decimal            cmd                 math                stringprep
_dummy_thread       code                mimetypes           struct
_elementtree        codecs              mmap                subprocess
_functools          codeop              modulefinder        sunau
_gdbm               collections         multiprocessing     symbol
_hashlib            colorama            netrc               symtable
_heapq              colorsys            nis                 sys
_imp                compileall          nntplib             sysconfig
_io                 concurrent          ntpath              syslog
_json               configparser        nturl2path          tabnanny
_locale             contextlib          numbers             tarfile
_lsprof             copy                opcode              telnetlib
_lzma               copyreg             operator            tempfile
_markupbase         crypt               optparse            termios
_md5                csv                 os                  test
_multibytecodec     ctypes              ossaudiodev         textwrap
_multiprocessing    curses              packaging           this
_opcode             datetime            parser              threading
_operator           dbm                 pathlib             time
_osx_support        decimal             pdb                 timeit
_pickle             difflib             pickle              token
_posixsubprocess    dis                 pickletools         tokenize
```

```
_pydecimal          distlib             pip                 trace
_pyio               distro              pipes               traceback
_random             distutils           pkg_resources       tracemalloc
_sha1               doctest             pkgutil             tty
_sha256             dummy_threading     platform            turtle
_sha3               easy_install        plistlib            types
_sha512             email               poplib              typing
_signal             encodings           posix               unicodedata
_sitebuiltins       ensurepip           posixpath           unittest
_socket             enum                pprint              urllib
_sqlite3            errno               profile             urllib3
_sre                faulthandler        pstats              uu
_ssl                fcntl               pty                 uuid
_stat               filecmp             pwd                 venv
_string             fileinput           py_compile          warnings
_strptime           fnmatch             pyclbr              wave
_struct             formatter           pydoc               weakref
_symtable           fractions           pydoc_data          webbrowser
_sysconfigdata_m_li ftplib              pyexpat             webencodings
_testbuffer         functools           pyparsing           wsgiref
_testcapi           gc                  queue               xdrlib
_testimportmultiple genericpath         quopri              xml
_testmultiphase     getopt              random              xmlrpc
_thread             getpass             re                  xxlimited
_threading_local    gettext             readline            xxsubtype
_tracemalloc        glob                reprlib             zipapp
_warnings           grp                 resource            zipfile
_weakref            gzip                retrying            zipimport
_weakrefset         hashlib             rlcompleter         zlib
abc                 heapq               runpy
```