

6 Security (MGK)

- (a) A Linux cloud server used by your team has the following discretionary access-control setup:

```
$ getent group admin users
admin*:9001:alice
users*:9002:alice,bobby,carla
$ ls -ld . * */*
drwxr-xr-x  3 carla users      4096 Apr  2  2017 .
-rwsr--r-x  1 bobby admin    241859 Jan  1  2013 proedit
-r--rw--w-  1 bobby admin     6355 Jul 24  2016 readme.txt
-rw----r--  1 carla admin     1459 Jun 12  2016 runtime.cfg
dr--r-xr-x  2 bobby users     4096 Jul 23  2016 src
-rw-r--r--  1 bobby users    26339 Apr 28  2018 src/code.c
-r--rw----  1 alice admin     6701 Jan 23  2017 src/code.h
```

The file `proedit` is a normal text editor, which allows its users to open, edit, save and execute files.

Copy and complete the access-control matrix illustrated below, such that it shows for each of the above five files, whether `alice`, `bobby`, or `carla` are able to obtain, directly or indirectly, read (R) or replace (W) access to its contents. Underline any access that can only be obtained through elevated rights.

	<code>proedit</code>	<code>readme.txt</code>	<code>runtime.cfg</code>	<code>src/code.c</code>	<code>src/code.h</code>
<code>alice</code>					
<code>bobby</code>					
<code>carla</code>					

[12 marks]

- (b) Several Linux file systems extend the POSIX file permission bits with an access-control list mechanism defined in POSIX.1e Draft 17. Explain four significant differences between these Linux ACLs and those of Windows NTFS.

[8 marks]