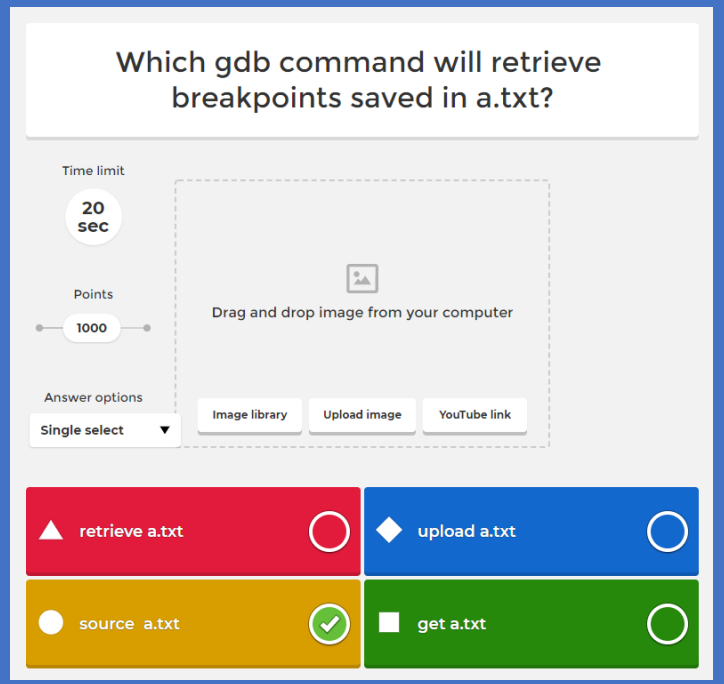

- You can save breakpoints to a file for later use using save command

```
(gdb) b factorial
Note: breakpoint 3 also set at pc 0x40056e.
Breakpoint 4 at 0x40056e: file debug_test.c, line 6.
(gdb) b 16
Breakpoint 5 at 0x4005ef: file debug_test.c, line 16.
(gdb) save breakpoint breakpoints.txt
Saved to file 'breakpoints.txt'.
(gdb) quit
```

- You can load the breakpoints from a file later using source command

```
(gdb) source breakpoints.txt
Breakpoint 1 at 0x56e: file debug_test.c, line 6.
Breakpoint 2 at 0x56e: file debug_test.c, line 6.
Breakpoint 3 at 0x5ef: file debug_test.c, line 16.
(gdb)
```

Which gdb command will show the stack?

Time limit

20 sec

Points

1000

Drag and drop image from your computer

Answer options

Single select

Image library | Upload image | YouTube link

- watch
- info
- p
- where ✓

- You can always tell where you are in the program by using the where command, which gives you a stack and the specific line number you are one

```
(gdb) where
#0  factorial (i=1) at debug_test.c:6
#1  0x004005ae in factorial (i=2) at debug_test.c:10
#2  0x004005ae in factorial (i=3) at debug_test.c:10
#3  0x004005ae in factorial (i=4) at debug_test.c:10
#4  0x004005eb in main (argc=1, argv=0xbffff234) at debug_test.c:15
(gdb)
```

Which gdb command steps the program forward one statement, regardless of the kind of statement it is on?

Time limit
30 sec

Points
1000

Drag and drop image from your computer

Answer options
Single select

Image library | Upload image | YouTube link

- next ✓
- step
- continue
- finish

- **There are four ways to advance the program in gdb**
  - next (n) steps the program forward one statement, regardless of the kind of statement it is on

```
int factorial( int i ) {
    if ( i == 1 ) {
        return( 1 );
    }
    return( factorial(i-1)*i );
}

int main( int argc, char *argv[] ) {
    int x = factorial(5);
    printf( "Factorial : %d! = %d\n", 5,  );
    return( 0 );

}
```

next

Which gdb command continues until the function returns?

Time limit

20 sec

Points

1000

Answer options

Single select

Drag and drop image from your computer

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- continue
- finish ✓
- next
- step

■ **Finish (fin)** continues until the function returns

```
int factorial( int i ) {
    if ( i == 1 ) {
        return( 1 );
    }
    return( factorial(i-1)*i );
}

int main( int argc, char *argv[] ) {
    int x = factorial(5);
    printf( "Factorial : %d! = %d\n", 5,  );
    return( 0 );

}
```

finish

Which gdb command will list breakpoints?

Time limit

20 sec

Points

1000

Drag and drop image from your computer

Answer options

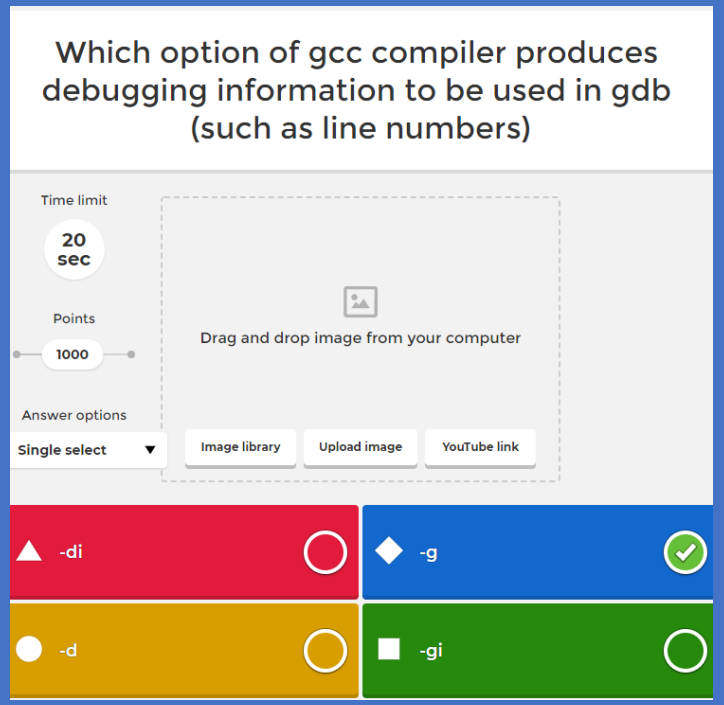
Single select

Image library | Upload image | YouTube link

- list breakpoints
- info breakpoints ✓
- get breakpoints
- where breakpoints

- If you want to see your breakpoints use the info breakpoints command

```
(gdb) info breakpoints
Num     Type           Disp Enb Address    What
3       breakpoint     keep y   0x0040056e in factorial at debug_test.c:6
        stop only if i<=1
        breakpoint already hit 1 time
(gdb)
```



Compiling for debugging

- Option –g produces debugging information to be used in gdb

gcc -Wall -g debug_test.c -o debug_test

- If you forget –g option when compiling, gdb will still work, but will be missing important information for debugging, such as line numbers.

- -ggdb is another option to produce useful information for debugging