

Group: C
Surname:
Date:

Name:
Email:

SpaceGame

STEP1: Please, read the following brief introduction

SpaceGame is a demonstrator for the framework GAME (Geometrical Ascii Multigame Environment), a C language framework for creating geometrical games using *ncurses* text screens. Input to SpaceGame comes from an ASCII keyboard; output goes to an ASCII terminal. The most important input keys for SpaceGame are:

- ‘h’, ‘j’, ‘k’, ‘l’ (alt: ‘4’, ‘2’, ‘8’, ‘6’): move West, South, North, East
- ‘7’, ‘9’, ‘1’, ‘3’: move North-West, North-East, South-West, South-East
- ‘s’: stop
- ‘q’: quit

It is possible to run SpaceGame in batch mode by passing in a command line string that contains the input keys to be executed (e.g., `./game jjll`). When executed in batch mode, SpaceGame prints the sequence of coordinate changes associated with the input keys.

STEP2: Compile, execute and practice

- Download the code from:
 - <http://security.polito.it/~basile/human-experiment/C/>
where you can find the archive for your OS and IDE.
- Compile SpaceGame: extract the downloaded archive, open the project with your IDE and build the program.
- Execute SpaceGame: launch the executable created in the previous step.
- Practice with SpaceGame, playing SpaceGame for a few minutes, to get an understanding of how it can be played by users (**do NOT look at the source code in this phase!**)

STEP3: Please, read the following description of the hacking exercise

Start time (without setup time) _____

End Time _____

Modify the source code of SpaceGame so that the effect of every movement is doubled: whenever the user presses a movement key, the position on the screen shall change by two space units instead of one. For instance, in the original implementation whenever the user presses key ‘j’, the row where the player is displayed is incremented by one. With the tampered code, it should be incremented by two. If executed in batch mode, SpaceGame should print coordinate changes where coordinates differ by two space units instead of one.

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C Skills Test

Answers		
1	2	3

1) Will the expression $*p = p$ be disallowed by the compiler?

- A. Yes
- B. No

2) Which of the following statement is correct about the program?

```
#include<stdio.h>
```

```
int main() {  
    FILE *fp;  
    char ch;  
    int i=1;  
    fp = fopen("myfile.c", "r");  
    while((ch=getc(fp))!=EOF) {  
        if(ch == '\n')  
            i++;  
    }  
    fclose(fp);  
    return 0;  
}
```

- A. The code counts number of characters in the file
- B. The code counts number of words in the file
- C. The code counts number of blank lines in the file
- D. The code counts number of lines in the file

3)What will be the output of the program?

```
#include<stdio.h>

int fun(int i) {
    i++;
    return i;
}

int main()
{
    int fun(int);
    int i=3;
    fun(i=fun(fun(i)));
    printf("%d\n", i);
    return 0;
}
```

- A. 5
- B. 4
- C. Error
- D. Garbage value