0x01. C - Variables, if, else, while

**C**

* By: Julien Barbier
* Weight: 1
* Project over - took place from Sep 9, 2022 6:00 AM to Sep 10, 2022 6:00 AM
* An auto review will be launched at the deadline

In a nutshell…

* **Auto QA review:** 50.0/70 mandatory & 0.0/21 optional
* **Altogether:**  **71.43%**
  + Mandatory: 71.43%
  + Optional: 0.0%
  + Calculation:  71.43% + (71.43% \* 0.0%)  == **71.43%**

Resources

**Read or watch**:

* [Everything you need to know to start with C.pdf](https://intranet.alxswe.com/rltoken/PkAydT3D9u5pN3nPCAlNZQ) (*You do not have to learn everything in there yet, but make sure you read it entirely first and make sure you understand the slides: “comments”, “Data types | Integer types”, “Declaration”, “Characters”, “Arithmetic operators”, “Variables assignments”, “Comparisons”, “Logical operators”, “if, if…else”, “while loops”.*)
* [Keywords and identifiers](https://intranet.alxswe.com/rltoken/58ThnAAxwJv5s_ceKMMPhw)
* [integers](https://intranet.alxswe.com/rltoken/2sXkmDiD7BF7pNIOxMQWFA)
* [Arithmetic Operators in C](https://intranet.alxswe.com/rltoken/S-b9MN2iELhSEwCI093Vzw)
* [If statements in C](https://intranet.alxswe.com/rltoken/usvxrTB3ko5kGTq48p5fSA)
* [if…else statement](https://intranet.alxswe.com/rltoken/CU6mSX1qdZKOhDEgmToUGA)
* [Relational operators](https://intranet.alxswe.com/rltoken/O1N-qacaTC-BHXm3Dp3eUA)
* [Logical operators](https://intranet.alxswe.com/rltoken/TaX_y6ll4cRfxCrxG8ZuNQ)
* [while loop in C](https://intranet.alxswe.com/rltoken/mwx2_bj3gIFEgCqdwdTp4w)
* [While loop](https://intranet.alxswe.com/rltoken/MW4Ob-6JLWt7Zn6vZ0EsBw)

**man or help**:

* ascii (*You do not need to learn about scanf, getc, getchar, EOF, EXIT\_SUCCESS, time, rand, srand, RAND\_MAX, for loops, do...while loops, functions.*)

Learning Objectives

At the end of this project, you are expected to be able to [explain to anyone](https://intranet.alxswe.com/rltoken/qBrRkO5QsdzGun5FkaMooQ), **without the help of Google**:

General

* What are the arithmetic operators and how to use them
* What are the logical operators (sometimes called boolean operators) and how to use them
* What the the relational operators and how to use them
* What values are considered TRUE and FALSE in C
* What are the boolean operators and how to use them
* How to use the if, if ... else statements
* How to use comments
* How to declare variables of types char, int, unsigned int
* How to assign values to variables
* How to print the values of variables of type char, int, unsigned int with printf
* How to use the while loop
* How to use variables with the while loop
* How to print variables using printf
* What is the ASCII character set
* What are the purpose of the gcc flags -m32 and -m64

Copyright - Plagiarism

* You are tasked to come up with solutions for the tasks below yourself to meet with the above learning objectives.
* You will not be able to meet the objectives of this or any following project by copying and pasting someone else’s work.
* You are not allowed to publish any content of this project.
* Any form of plagiarism is strictly forbidden and will result in removal from the program.

Requirements

General

* Allowed editors: vi, vim, emacs
* All your files will be compiled on Ubuntu 20.04 LTS using gcc, using the options -Wall -Werror -Wextra -pedantic -std=gnu89
* All your files should end with a new line
* A README.md file, at the root of the folder of the project
* There should be no errors and no warnings during compilation
* You are not allowed to use system
* Your code should use the Betty style. It will be checked using [betty-style.pl](https://github.com/holbertonschool/Betty/blob/master/betty-style.pl) and [betty-doc.pl](https://github.com/holbertonschool/Betty/blob/master/betty-doc.pl)

Quiz questions

**Great!** You've completed the quiz successfully! Keep going! (Show quiz)

Tasks

0. Positive anything is better than negative nothing

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

This program will assign a random number to the variable n each time it is executed. Complete the source code in order to print whether the number stored in the variable n is positive or negative.

* You can find the source code [here](https://intranet.alxswe.com/rltoken/rrqNDWjrCWdARnWFLPExPw)
* The variable n will store a different value every time you will run this program
* You don’t have to understand what rand, srand, RAND\_MAX do. Please do not touch this code
* The output of the program should be:
  + The number, followed by
    - if the number is greater than 0: is positive
    - if the number is 0: is zero
    - if the number is less than 0: is negative
  + followed by a new line

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 0-positive\_or\_negative.c -o 0-positive\_or\_negative

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

-520693284 is negative

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

-973398895 is negative

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

-199220452 is negative

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

561319348 is positive

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

561319348 is positive

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

266853958 is positive

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

-48147767 is negative

julien@ubuntu:~/0x01$ ./0-positive\_or\_negative

0 is zero

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 0-positive\_or\_negative.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

1. The last digit

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

This program will assign a random number to the variable n each time it is executed. Complete the source code in order to print the last digit of the number stored in the variable n.

* You can find the source code [here](https://intranet.alxswe.com/rltoken/5HWhPDsq3jq1yCRQFrLl4Q)
* The variable n will store a different value every time you run this program
* You don’t have to understand what rand, srand, and RAND\_MAX do. Please do not touch this code
* The output of the program should be:
  + The string Last digit of, followed by
  + n, followed by
  + the string is, followed by
    - if the last digit of n is greater than 5: the string and is greater than 5
    - if the last digit of n is 0: the string and is 0
    - if the last digit of n is less than 6 and not 0: the string and is less than 6 and not 0
  + followed by a new line

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 1-last\_digit.c -o 1-last\_digit

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 629438752 is 2 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -748255693 is -3 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -1052791662 is -2 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -284805734 is -4 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -284805734 is -4 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 491506926 is 6 and is greater than 5

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 954249937 is 7 and is greater than 5

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 652334952 is 2 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -729688197 is -7 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of -729688197 is -7 and is less than 6 and not 0

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 45528266 is 6 and is greater than 5

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 45528266 is 6 and is greater than 5

julien@ubuntu:~/0x01$ ./1-last\_digit

Last digit of 809065140 is 0 and is 0

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 1-last\_digit.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

2. I sometimes suffer from insomnia. And when I can't fall asleep, I play what I call the alphabet game

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints the alphabet in lowercase, followed by a new line.

* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar twice in your code

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 2-print\_alphabet.c -o 2-print\_alphabet

julien@ubuntu:~/0x01$ ./2-print\_alphabet

abcdefghijklmnopqrstuvwxyz

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 2-print\_alphabet.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

3. alphABET

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints the alphabet in lowercase, and then in uppercase, followed by a new line.

* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar three times in your code

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 3-print\_alphabets.c -o 3-print\_alphabets

julien@ubuntu:~/0x01$ ./3-print\_alphabets | cat -e

abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ$

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 3-print\_alphabets.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

4. When I was having that alphabet soup, I never thought that it would pay off

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints the alphabet in lowercase, followed by a new line.

* Print all the letters except q and e
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar twice in your code

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 4-print\_alphabt.c -o 4-print\_alphabt

julien@ubuntu:~/0x01$ ./4-print\_alphabt

abcdfghijklmnoprstuvwxyz

julien@ubuntu:~/0x01$ ./4-print\_alphabt | grep [eq]

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 4-print\_alphabt.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

5. Numbers

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints all single digit numbers of base 10 starting from 0, followed by a new line.

* All your code should be in the main function

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 5-print\_numbers.c -o 5-print\_numbers

julien@ubuntu:~/0x01$ ./5-print\_numbers

0123456789

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 5-print\_numbers.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

6. Numberz

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints all single digit numbers of base 10 starting from 0, followed by a new line.

* You are not allowed to use any variable of type char
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* You can only use putchar twice in your code
* All your code should be in the main function

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 6-print\_numberz.c -o 6-print\_numberz

julien@ubuntu:~/0x01$ ./6-print\_numberz

0123456789

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 6-print\_numberz.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

7. Smile in the mirror

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints the lowercase alphabet in reverse, followed by a new line.

* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar twice in your code

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 7-print\_tebahpla.c -o 7-print\_tebahpla

julien@ubuntu:~/0x01$ ./7-print\_tebahpla

zyxwvutsrqponmlkjihgfedcba

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 7-print\_tebahpla.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

8. Hexadecimal

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints all the numbers of base 16 in lowercase, followed by a new line.

* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar three times in your code

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 8-print\_base16.c -o 8-print\_base16

julien@ubuntu:~/0x01$ ./8-print\_base16

0123456789abcdef

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 8-print\_base16.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

9. Patience, persistence and perspiration make an unbeatable combination for success

**mandatory**

Score: 71.43% (*Checks completed: 71.43%*)

Write a program that prints all possible combinations of single-digit numbers.

* Numbers must be separated by ,, followed by a space
* Numbers should be printed in ascending order
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* All your code should be in the main function
* You can only use putchar four times maximum in your code
* You are not allowed to use any variable of type char

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 9-print\_comb.c -o 9-print\_comb

julien@ubuntu:~/0x01$ ./9-print\_comb | cat -e

0, 1, 2, 3, 4, 5, 6, 7, 8, 9$

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 9-print\_comb.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

10. Inventing is a combination of brains and materials. The more brains you use, the less material you need

**#advanced**

Score: 0.0% (*Checks completed: 0.0%*)

Write a program that prints all possible different combinations of two digits.

* Numbers must be separated by ,, followed by a space
* The two digits must be different
* 01 and 10 are considered the same combination of the two digits 0 and 1
* Print only the smallest combination of two digits
* Numbers should be printed in ascending order, with two digits
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* You can only use putchar five times maximum in your code
* You are not allowed to use any variable of type char
* All your code should be in the main function

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 100-print\_comb3.c -o 100-print\_comb3

julien@ubuntu:~/0x01$ ./100-print\_comb3

01, 02, 03, 04, 05, 06, 07, 08, 09, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 34, 35, 36, 37, 38, 39, 45, 46, 47, 48, 49, 56, 57, 58, 59, 67, 68, 69, 78, 79, 89

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 100-print\_comb3.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

11. The success combination in business is: Do what you do better... and: do more of what you do...

**#advanced**

Score: 0.0% (*Checks completed: 0.0%*)

Write a program that prints all possible different combinations of three digits.

* Numbers must be separated by ,, followed by a space
* The three digits must be different
* 012, 120, 102, 021, 201, 210 are considered the same combination of the three digits 0, 1 and 2
* Print only the smallest combination of three digits
* Numbers should be printed in ascending order, with three digits
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* You can only use putchar six times maximum in your code
* You are not allowed to use any variable of type char
* All your code should be in the main function

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 101-print\_comb4.c -o 101-print\_comb4

julien@ubuntu:~/0x01$ ./101-print\_comb4

012, 013, 014, 015, 016, 017, 018, 019, 023, 024, 025, 026, 027, 028, 029, 034, 035, 036, 037, 038, 039, 045, 046, 047, 048, 049, 056, 057, 058, 059, 067, 068, 069, 078, 079, 089, 123, 124, 125, 126, 127, 128, 129, 134, 135, 136, 137, 138, 139, 145, 146, 147, 148, 149, 156, 157, 158, 159, 167, 168, 169, 178, 179, 189, 234, 235, 236, 237, 238, 239, 245, 246, 247, 248, 249, 256, 257, 258, 259, 267, 268, 269, 278, 279, 289, 345, 346, 347, 348, 349, 356, 357, 358, 359, 367, 368, 369, 378, 379, 389, 456, 457, 458, 459, 467, 468, 469, 478, 479, 489, 567, 568, 569, 578, 579, 589, 678, 679, 689, 789

julien@ubuntu:~/0x01$

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 101-print\_comb4.c

 Done? Help Check your code Ask for a new correction Get a sandbox QA Review

12. Software is eating the World

**#advanced**

Score: 0.0% (*Checks completed: 0.0%*)

Write a program that prints all possible combinations of two two-digit numbers.

* The numbers should range from 0 to 99
* The two numbers should be separated by a space
* All numbers should be printed with two digits. 1 should be printed as 01
* The combination of numbers must be separated by comma, followed by a space
* The combinations of numbers should be printed in ascending order
* 00 01 and 01 00 are considered as the same combination of the numbers 0 and 1
* You can only use the putchar function (every other function (printf, puts, etc…) is forbidden)
* You can only use putchar eight times maximum in your code
* You are not allowed to use any variable of type char
* All your code should be in the main function

julien@ubuntu:~/0x01$ gcc -Wall -pedantic -Werror -Wextra -std=gnu89 102-print\_comb5.c -o 102-print\_comb5

julien@ubuntu:~/0x01$ ./102-print\_comb5

00 01, 00 02, 00 03, 00 04, 00 05, 00 06, 00 07, 00 08, 00 09, 00 10, 00 11, [...] 40 91, 40 92, 40 93, 40 94, 40 95, 40 96, 40 97, 40 98, 40 99, 41 42, 41 43, 41 44, 41 45, 41 46, 41 47, 41 48, 41 49, 41 50, 41 51, 41 52, 41 53 [...] 93 95, 93 96, 93 97, 93 98, 93 99, 94 95, 94 96, 94 97, 94 98, 94 99, 95 96, 95 97, 95 98, 95 99, 96 97, 96 98, 96 99, 97 98, 97 99, 98 99

**Repo:**

* GitHub repository: alx-low\_level\_programming
* Directory: 0x01-variables\_if\_else\_while
* File: 102-print\_comb5.c

 Done? Help Check your code Ask for a new correction Get a sandbox