COMP10120 Assignment 1

Heart Health

Create a program in C that:

Offers the user a choice of a BMI (Body Mass Index) calculation, a blood pressure assessment, or a cardiac risk score assessment and implements **separate functions** for each of these options.

Please format all your code according to this style guide: https://codingart.readthedocs.io/en/latest/c/Formatting.html

Part 1 (20%)

If the user selects BMI calculation, the program should request their weight in kilograms and height in metres and returns their BMI and Weight Category according to the criteria below.

The formula is: BMI = kg/m²

Where kg is a person's weight in kilograms and m is their height in metres. The result is interpreted as follows:

| ВМІ | Weight Category | | | | | | | |
|----------------|-----------------|--|--|--|--|--|--|--|
| <18.5 | Underweight | | | | | | | |
| >= 18.5 & < 25 | Normal | | | | | | | |
| >= 25 & < 30 | Overweight | | | | | | | |
| >= 30 | Obese | | | | | | | |

Part 2 (20%)

If the user selects blood pressure assessment, the program should request five blood pressure readings (both a systolic and diastolic measures (in mmHg)) store these readings in an array, calculate the average systolic and average diastolic reading and determines if the blood pressure is high, pre-high, ideal or low based on the data on the chart shown here.

Part 3 (60%)

If the user selects cardiac risk assessment, ask the user for the minimum amount of information to calculate their ERICE risk score category (low, mild, moderate, moderate-high, high or very high) according to the charts on the following pages.

The ERICE score is a native cardiovascular risk score for the Spanish population, which gives the risk of a first fatal or non-fatal cardiac event in the next ten years. You can assume that the patient is not taking antihypertensive treatment/medication. SBP means systolic blood pressure, as in the blood pressure question.

Implement appropriate error handling, and provide a nice output with the results. Things to consider for this and all programs:

- The data types to use in the program.
- How to handle edge cases.
- The instructions needed for users.
- Appropriate Error handling with input (e.g. an impossible height is entered)- There is no need to check for data types.
- How to format the output in a user-friendly way.
- Description of the program/author in the header.
- The use of white space.
- The use of comments.
- The efficiency. For example, is longhand used where a loop would be better or are unnecessary variables created.

This program should be submitted via Brightspace as a single c file. The naming convention is 123456A1.c where 123456 is your student number and A1 denotes Assignment 1.

Submissions should be made as a single .c file that runs in C99 on Brightspace

| - [| g - | | | Men with | out antihi | | ve trea | Men without antihipertensive treatment | | | | | | | | | | | | |
|-----|--------|--|-------|----------|------------|-------|---------|--|---------|-------|-------|---------|--|--------|-------|---------|---------|-------|--|--|
| ŀ | _ | Diabetics Non smokers Smokers | | | | | | | | | | | Non diabetics Non smokers Smokers | | | | | | | |
| ŀ | 22 | CONTRACTOR OF THE CONTRACTOR O | | | | | | | | 1.70 | -50 | | The Control of the Co | T- 7.0 | | | | | | |
| ŀ | Ch | olesterol | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | | |
| - 1 | | ≥ 180 | 56 | 57 | 58 | 55 | 66 | 67 | 69 | 65 | 46 | 47 | 48 | 45 | 56 | 57 | 58 | 5 | | |
| | SBP | 160-180 | 154 | 54 | 58 | 52 | 64 | 65 | 67 | 63 | 99 | 45 | 46 | 143 | 54 | 54 | 58 | 5 | | |
| - 1 | S | 140-160 | 154 | 511 | 53 | 49 | 61 | (62) | :64 | 60 | 44 | 42 | 46 | .40 | .51 | 51 | 53 | 19 | | |
| Ļ | | < 140 | 138 | 38 | 40 | 38 | 47 | 47 | 49 | 345 | 30 | 30 | 32 | 30 | :38 | 38 | .48 | 3 | | |
| - 1 | SBP | ≥ 180 | 35 | 35 | 37 | 34 | 43 | 44 | 45 | 42 | 27 | 28 | 29 | 27 | 35 | 95 | 37 | 3 | | |
| - 1 | | 160-180 | 33 | 33 | 35 | 32 | 41 | 42 | 43 | 40 | 26 | 26 | 28 | 25 | 33 | 33 | 35 | 3 | | |
|) | S | 140-160 | 3/1 | 31 | 33 | 30 | 39 | 39 | 41 | 37 | 24 | 25 | 26 | 23 | 311 | 31 | 33 | 3 | | |
| | | < 140 | 22 | 22 | 23 | 21 | 28 | 28 | 29 | 27 | 17 | 17 | 18 | 16 | 22 | 22 | 23 | 2 | | |
| Γ | | ≥ 180 | 24 | 24 | 25 | 23 | 30 | 30 | 32 | 32 | 18 | 19 | 19 | 18 | 24 | 24 | 25 | 2 | | |
| - 1 | ۵. | 160-180 | 22 | 23 | 24 | 22 | 28 | 29 | .30 | 30 | 17 | 18 | 18 | 17 | 22 | 23 | 24 | 2 | | |
| 9 | SBP | 140-160 | 21 | 21 | 22 | 20 | 27 | 27 | 28 | 26 | 16 | 16 | 17 | 15 | 21 | 21 | 22 | 2 | | |
| - 1 | | < 140 | 14 | 15 | 15 | 15 | 19 | 19 | 19 | 18 | 11 | 11 | 12 | 11 | 14 | 15 | 15 | 1 | | |
| ı | | ≥ 180 | 12 | 12 | 13 | 12 | 16 | 16 | 17 | 15 | 9 | 10 | 10 | 10 | 12 | 12 | 13 | - 1 | | |
| - 1 | ۵. | 160-180 | 12 | 12 | 12 | 11 | 15 | 15 | 16 | 16 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | | | |
| 9 | SBP | 140-160 | 311 | 11 | 11 | 10 | 14 | 14 | 14 | 13 | 8 | 8 | 9 | 8 | 311 | 11 | 11 | - 1 | | |
| | | < 140 | 7 | 7 | 8 | 7 | 9 | 10 | 10 | 9 | 6 | 6 | 6 | 5 | 7 | 7 | 8 | | | |
| ı | | ≥ 180 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 3 | 3 | 4 | 3 | 4 | 5 | 5 | | | |
| - 1 | ۵. | 160-180 | 4 | 4 | - 5 | 5 | 6 | 6 | 6 | 5 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | | | |
| . | SBP | 140-160 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | | | |
| ~ | | < 140 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | | | |
| ľ | 2 | ≥ 180 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | | | |
| | ۵. | 160-180 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| 9 | SBP | 140-160 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| | A (1) | < 140 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Ì | Ch | olesterol | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7. | | |

Low: < 5 Mild: 5% to 9% Moderate: 10% to 14% Moderate-high: 15% to 19% High: 20% to 29% Very high: ≥ 30%

| | Women without antihipertensive treatment Diabetics | | | | | | | | | | | Women | | | | | | | |
|--------|--|-----------|-------|---------|---------|-------|-------|---------|---------|-------|-------|-------------|---------|-------|-------|---------|---------|-------|--|
| | | | | | | | | | | | | | 1 | | | | | | |
| | Non smokers | | | | | | | Smokers | | | | Non smokers | | | | Sm | okers | | |
| | Ch | olesterol | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | |
| | | ≥ 180 | 70 | 70 | 69 | 62 | 84 | 84 | 88 | 77 | 54 | 55 | 53 | 46 | . 69 | 69 | 68 | 61 | Low: < 5 |
| | ۵ | 160-180 | .150 | 50 | 99 | 42: | 64 | 65 | .64 | 56 | 36: | 36 | 35 | 130 | 48 | 149 | 48 | :41 | Mild: 5% to 9% |
| 0 | SBP | 140-160 | 56 | 57: | 55 | 48 | 7/1 | 72 | :70 | :83 | 41 | 42 | 40 | 34 | :55 | 55 | 154 | :47 | Moderate: 10% to 14% |
| | | < 140 | 154 | 54 | 53 | 46 | 69 | 69 | 68 | 80 | 39 | 40 | 38 | 33 | - 53 | 53 | 52 | 45 | Moderate-high: 15% to 199 |
| | | ≥ 180 | 39 | 39 | 38 | 33 | 53 | 53 | 52 | 45 | 27 | 28 | 27 | 22 | 38 | 38 | 37 | 32 | High: 20% to 29% |
| | ۵ | 160-180 | 24 | 25 | 24 | 20 | 34 | 35 | 34 | 30. | 16 | 17 | 16 | 15 | 24 | 24 | 23 | 20 | Very high: ≥ 30% |
| 79 | SBP | 140-160 | 29 | 29 | 28 | 24 | 40 | 40 | - 39 | 33 | 19 | 19 | 19 | 16 | 28 | 28 | 27 | 23 | The state of the s |
| | 5 | < 140 | 27 | 27 | 27 | 22 | 38 | 38 | -37 | 32 | 18 | 19 | 18 | 15 | 26 | 27 | 26 | 22 | |
| | 32 | ≥ 180 | 21 | 21 | 21 | 20 | 29 | 29 | 29 | 25 | 14 | 14 | 14 | 11 | 20 | 21 | 20 | 20 | |
| | ۵ | 160-180 | 13 | 13 | 12 | 10 | 18 | 19 | 18 | 15 | 8 | 8 | 8 | 7 | 12 | 12 | 12 | 10 | |
| 69 | SBP | 140-160 | 14 | 14 | 14 | 12 | 19 | 19 | 19 | 18 | 9 | 9 | 9 | 8 | 14 | 14 | 14 | 12 | |
| | | < 140 | 14 | 14 | 14 | 11 | 19 | 19 | 19 | 17 | 9 | 9 | 9 | 7 | 14 | 14 | 13 | 11 | |
| | | ≥ 180 | 12 | 12 | 12 | 10 | 18 | 18 | 17 | 15 | 8 | 8 | 8 | 6 | 12 | 12 | 111 | 10 | |
| | Q. | 160-180 | 7 | 7 | 7 | 6 | 10 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 7 | 7 | 7 | 5 | |
| 59 | SBP | 140-160 | 8 | 8 | 8 | 7 | 12 | 12 | 12 | 10 | 5 | 6 | 5 | 5 | 8 | 8 | 8 | 6 | |
| 200000 | | < 140 | 8 | 8 | 8 | 6 | 12 | 12 | 11 | 10 | 5 | 5 | 5 | 5 | 8 | 8 | 7 | 6 | |
| | | ≥180 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | Q. | 160-180 | 1 | 1 | - 1 | - 1 | - 1 | 1 | - 1 | 1 | 1 | 1 | 1 | 0 | 1 | . 1 | 1 | 1 | |
| 49 | SBP | 140-160 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | < 140 | -1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | Ch | olesterol | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | < 5.2 | 5.2-6.4 | 6.5-7.7 | ≥ 7.8 | |

Rev Esp Cardiol. 2015;68:205-15