BIL141 Homework Assignment 3

Due date: 17.11.2019 23:59

In this homework assignment, you are to implement a basic family tree. To make this implementation, first, you need to implement a **Person** struct which has the following attributes:

- **name:** name of the person
- **year_of_birth:** birth year of the person
- **sex:** sex of the person which can be either "**male**" or "**female**"
- **father:** father of the person which should be **Person*** type
- **mother:** mother of the person which should be **Person*** type
- **significant_other:** wife or husband of the person which should be **Person*** type
- **children:** children of the person which should be **Person**** type because it consists of at most 2 children.
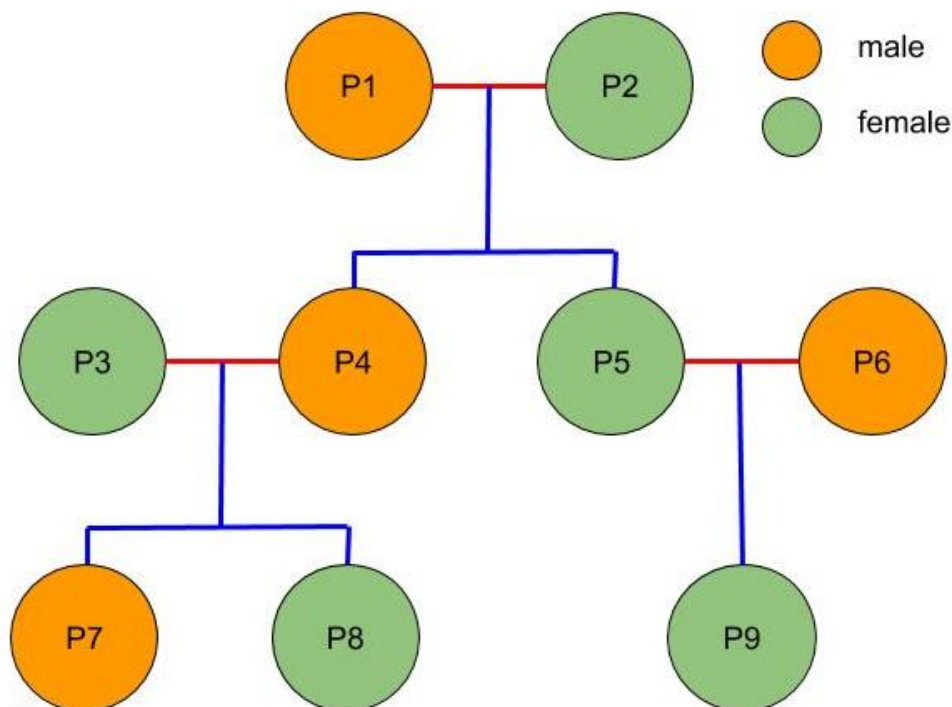

Figure 1. Family Tree

```
Person* person_constructor(char *name, int year_of_birth, char *sex);
```

- Create a person with the given arguments and return it.
- Do not forget to allocate memory.

```
void display_person(Person* p);
```

- Displays person information. Check the example below for formatting.

```
void display_family(Person* family[], int n);
```

- Displays persons belong to the family. Check the example below for formatting.

```
void marry_them(Person *p1, Person *p2);
```

- This is a marriage function. It makes a connection (red connections in fig. 1) between two persons, *p1* and *p2*.

```
Person* birth(char *name, int year_of_birth, char *sex, Person *mother);
```

- *mother* gives birth. It means that you need to create a new person with given arguments and you need to add the baby to the family tree (blue connections int fig. 1). You also need to return this new person.

```
Person* sibling(Person p, int print);
```

- Returns the sibling of given person *p*.

```
void display_uncles(Person p);
```

- Prints name of the uncles for a person *p*. Person *p* can have multiple uncles. Assume that uncle refers to "amca", "dayı", and "enişte" in Turkish.

```
void display_aunts(Person p);
```

- Prints name of the aunts for a person *p*. Person *p* can have multiple aunts. Assume that aunt refers to "hala", "teyze", and "yenge" in Turkish.

Examples

1. This example creates a family shown in fig. 1. For debug purposes, create the same family.

```
Person* p1 = person_constructor("Abbas", 1970, "male");
Person* p2 = person_constructor("Sıdıka", 1970, "female");
marry_them(p1, p2);

Person* p3 = person_constructor("Pınar", 1990, "female");
Person* p4 = birth("Siamak", 1990, "male", p2);
marry_them(p3, p4);

Person* p5 = birth("Güzide", 1990, "female", p2);
Person* p6 = person_constructor("Fatih", 1990, "male");
marry_them(p5, p6);

Person* p7 = birth("Berkecan", 2010, "male", p3);
Person* p8 = birth("Ekinsu", 2010, "female", p3);
Person* p9 = birth("Canım", 2010, "female", p5);

Person* family[] = {p1, p2, p3, p4, p5, p6, p7, p8, p9};
```

2. Shows an example for formatting of `display_person()` function.

```
display_person(p1);
================
Name    : Abbas
Sex     : male
```

```
Year   : 1970
Father : NA
Mother : NA
Sig.O  : Sıdıka
Child 1: Siamak
Child 2: Güzide
```

3. Shows an example for formatting of `display_family()` function.

```
display_family(family, 9);
================
Name   : Abbas
Sex    : male
Year   : 1970
Father : NA
Mother : NA
Sig.O  : Sıdıka
Child 1: Siamak
Child 2: Güzide
================
Name   : Sıdıka
Sex    : female
Year   : 1970
Father : NA
Mother : NA
Sig.O  : Abbas
Child 1: Siamak
Child 2: Güzide
================
Name   : Pınar
Sex    : female
Year   : 1990
Father : NA
Mother : NA
Sig.O  : Siamak
Child 1: Berkecan
Child 2: Ekinsu
================
Name   : Siamak
Sex    : male
Year   : 1990
Father : Abbas
Mother : Sıdıka
Sig.O  : Pınar
Child 1: Berkecan
Child 2: Ekinsu
================
Name   : Güzide
Sex    : female
Year   : 1990
Father : Abbas
Mother : Sıdıka
Sig.O  : Fatih
Child 1: Canım
Child 2: NA
================
```

```
Name    : Fatih
Sex     : male
Year    : 1990
Father  : NA
Mother  : NA
Sig.O   : Güzide
Child 1: Canım
Child 2: NA
================
Name    : Berkecan
Sex     : male
Year    : 2010
Father  : Siamak
Mother  : Pınar
Sig.O   : NA
Child 1: NA
Child 2: NA
================
Name    : Ekinsu
Sex     : female
Year    : 2010
Father  : Siamak
Mother  : Pınar
Sig.O   : NA
Child 1: NA
Child 2: NA
================
Name    : Canım
Sex     : female
Year    : 2010
Father  : Fatih
Mother  : Güzide
Sig.O   : NA
Child 1: NA
Child 2: NA
```

4. Shows an example for `sibling()` function.

```
sibling(*p7, 1);
The sibling of Berkecan is Ekinsu.
```

5. Shows an example for `display_uncles()` function.

```
display_uncles(*p7);
Fatih
```

6. Shows an example for `display_aunts()` function.

```
display_aunts(*p9);
Pınar
```