Software Testing

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- Black box Testing
- Write down test cases using strong robust equivalence class partitioning
    1. **cells(white_blood_cells , red_blood_cells);**
    2. **physical_fitness(weight,age);**
    3. **checkup(heart_beat , body_temp , oxygen_level);**

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Assessment type: Assignment 01	Marks: 10
Deadline: 1, October, 2020	Assignment Type: Group based
Names:- Shahzeb Malik (BSE181001) , Syed Ruksar Ali (BSE181019)	

1. Choose any problem statement of your choice and do following.
    a. Explain the case study of the problem (minimum 400 words)

A blood bank is a place where blood is collected from donors, typed, separated into components, stored, and prepared for transfusion to recipients. A blood bank may be a separate free-standing facility or part of a larger laboratory in a hospital. Typically, each donated unit of blood (whole blood) is separated into multiple components, such as red blood cells, plasma and platelets. Each component is generally transfused to a different individual, each with different needs. An increasingly common blood bank procedure is apheresis, or the process of removing a specific component of the blood, such as platelets, and returning the remaining components, such as red blood cells and plasma, to the donor. This process allows more of one particular part of the blood to be collected than could be separated from a unit of whole blood. Apheresis is also performed to collect plasma (the liquid part of the blood) and granulocytes (white blood cells). To donate blood or platelets, you must be in good general health, weigh at least 110 pounds, and be at least 16 years old, your heart beat should be range between 60 to 100 beats per minute, your body temperature should be approximately 37 degrees Celsius and your normal pulse oximeter readings should range from 95 to 100 percent. Parental consent is required for blood donation by 16 year old's; 16 year old's are NOT eligible to donate platelets. No parental consent is required for those who are at least 17 years old. If you are 76 or older, you will need your doctor’s written approval for blood or platelet donation. Before donating, one of medical professionals will discuss whether you are in good health or not. After taking your pulse, blood pressure, age and temperature and checking for anemia, medical staff determine whether you are eligible to be a donor or not. Good health means that you feel well and are able to carry out normal daily activities. If you have a chronic medical condition such as diabetes or high blood pressure, you may still be eligible as long as you are receiving treatment to control your condition. After blood is drawn, it is tested for the ABO blood group type and the Rh type (positive or negative), as well as for any unexpected red blood cell antibodies that may cause problems in the recipient. Screening tests are also performed for evidence of donor infection with hepatitis viruses B and C, human immunodeficiency viruses (HIV) 1 and 2, human T-lymphotropic viruses (HTLV) I and II and syphilis. Each unit of whole blood is normally separated into several components. Red blood cells may be stored under refrigeration for a maximum of 42 days, or they may be frozen for up to 10 years. Red cells carry oxygen and are used to treat anemia. Platelets are important in the control of bleeding and are generally used in patients with leukemia and other forms of cancer. Platelets are stored at room temperature and may be kept for a maximum of five days. Fresh frozen plasma, used to control bleeding due to low levels of some clotting factors, is usually kept in the frozen state for up to one year. Cryoprecipitate AHF, which contains only a few specific clotting factors, is made from fresh frozen plasma and may be stored frozen for up to one year. Granulocytes are sometimes used to fight infections, although their efficacy is not well-established. They must be transfused within 24 hours of donation.

b. Identify the functions (at least 3) from the case study and there must me at least one function that takes 3 parameters

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Functions:

- Cells (white_blood_cells,red_blood_cells);
- physical_fitness (weight,age);
- checkup (heart_beat,body_temp,oxygen_level);

c. Black box Testing

i. Using worst case BVA, identify test cases of **each function** and list down all test cases

- **Cells (white_blood_cells,red_blood_cells);**

white_blood_cells=5.2,2.4,5.4,7.2,6.4
red_blood_cells=8,8.9,7.5,8.3,6.8
Test Cases:
{<5.2,8><5.2,8.9><5.2,7.5><5.2,8.3><5.2,6.8><2.4,8><2.4,8.9><2.4,7.5><2.4,8.3><2.4,6.8><5.4,8><5.4,8.9><5.4,7.5><5.4,8.3><5.4,6.8><7.2,8><7.2,8.9><7.2,7.5><7.2,8.3><7.2,6.8><6.4,8><6.4,8.9><6.4,7.5><6.4,8.3><6.4,6.8>}

- **Physical_fitness (weight,age);**

weight=5,6,7,8,9
age=18.4,20.6,22.9,25.6,31.2
Test Cases:
{<5,18.4><5,20.6>< 5,22.9>< 5,25.6>< 5,31.2><6,18.4>< 6,20.6>< 6,22.9>< 6,25.6>< 6,31.2><7,18.4>< 7,20.6>< 7,22.9>< 7,25.6>< 7,31.2><8,18.4>< 8,20.6>< 8,22.9>< 8,25.6>< 8,31.2><9,18.4>< 9,20.6>< 9,22.9>< 9,25.6>< 9,31.2>}

- **checkup (heart_beat,body_temp,oxygen_level);**

heart_beat=63.8,64.6,70,66.9,65.7
body_temp=37.4,40.9,41.9,38.8,39.4
oxygen_level =68,70,79,85,93
Test Cases:
{<63.8,37.4,68><63.8,40.9,70><63.8,41.9,79><63.8,38.8,85><63.8,39.4,93><64.6,37.4,68><64.6,40.9,70><64.641.9,79><64.6,38.8,85><64.6,39.4,93><70,37.4,68><70,40.9,70><70,41.9,79><70,38.8,85><70,39.4,93><66.9,37.4,68><66.9,40.9,70><66.9,41.9,79><66.9,38.8,85><66.9,39.4,93><65.7,37.4,68><65.7,40.9,70><65.7,41.9,79><65.7,38.8,85><65.7,39.4,93><37.4,63.8,68><37.4,64.6,70><37.4,70,79><37.4,66.9,85><37.4,65.7,93><40.9,63.8,68><40.9,64.6,70><40.9,70,79><40.9,66.9,85><40.9,65.7,93><41.9,63.8,68><41.9,64.6,70><41.9,70,79><41.9,66.9,85><41.9,65.7,93><38.8,63.8,68><38.8,64.6,70><38.8,70,79><38.8,66.9,85><38.8,65.7,93><39.4,63.8,68><39.4,64.6,70><39.4,70,79><39.4,66.9,85><39.4,65.7,93><68,63.8,37.4><68,64.6,40.9><68,70,41.9><68,66.9,38.8><8,65.7,39.4><70,63.8,37.4><70,64.6,40.9><70,70,41.9><70,66.9,38.8><70,65.7,39.4><79,63.8,37.4><79,64.6,40.9><79,70,41.9><79,66.9,38.8><79,65.7,39.4><85,63.8,37.4><85,64.6,40.9><85,70,41.9><85,66.9,38.8><85,65.7,39.4><93,63.8,37.4><93,64.6,40.9><93,70,41.9><93,66.9,38.8><93,65.7,39.4><63.8,37.4,68><63.8,37.4,70><63.8,37.4,79><63.8,37.4,85><63.8,37.4,93><64.6,40.9,68><64.6,40.9,70><64.6,40.9,79><64.6,40.9,85><64.6,40.9,93><70,41.9,68><70,41.9,70><70,41.9,79><7

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0,41.9,85><70,41.9,93><66.9,38.8,68><66.9,38.8,70><66.9,38.8,79><66.9,38.8,85><66.9,38.8,93><65.7,39.4,68><65.7,39.4,70><65.7,39.4,79><65.7,39.4,85><65.7,39.4,93><63.8,37.4,68><63.8,40.9,68><63.8,41.9,68><63.8,38.8,68><63.8,39.4,68><64.6,37.4,70><64.6,40.9,70><64.6,41.9,70><64.6,38.8,70><64.6,39.4,70><70,37.4,79><70,40.9,79><70,41.9,79><70,38.8,79><70,39.4,79><66.9,37.4,85><66.9,40.9,85><66.9,41.9,85><66.9,98.8,85><66.9,39.4,85><65.7,37.4,93><65.7,40.9,93><65.7,41.9,93><65.7,38.8,93><65.7,39.4,93>}

ii. **Implement function**

iii. Implement 50% test cases of each function

2. For case study selected in Assignment 01
    a. Write down test cases using strong robust equivalence class partitioning
        i. Write down test cases for all three functions including a function having three parameters
            - cells(white_blood_cells , red_blood_cells);
            - physical_fitness(weight,age);
            - checkup(heart_beat , body_temp , oxygen_level);

cells(white_blood_cells , red_blood_cells)

white_blood_cells = 4.5 to 11

red_blood_cells = 12 to 18

White		Red
<4.5	,	30>
<4.5	,	7>
<12	,	13>
<12	,	4.4>
<14	,	21>
<2	,	9>
<13	,	8>
<22	,	1>
<6	,	15>

physical_files(weight,age)

weight = (40,100)

age = (15,80)

Weight		Age
<40	,	82>
<40	,	14>
<15	,	103>

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<415	,	35>
<106	,	85>
<31	,	12>
<10	,	11>
<86	,	33>
<41	,	30>

checkup(heart_beat, body_temp, oxygen_level);

heart_beat = (50 to 110)

body_temp = (37 to 110)

oxygen_level = (90 to 100)

Heart_beat	Body_temp	Oxygen_level
<111	112	103>
<113	114	90>
<115	112	103>
<50	38	40>
<37	30	83>
<38	28	92>
<41	38	96>
<65	40	93>
<120	28	115>
<49	116	75>
<53	34	48>
<54	42	112>
<56	96	45>
<128	82	94>
<30	88	91>
<93	129	94>
<108	34	97>

b. Submit word and pdf document on team assignment (must be having front page, table of contents and actual contents)

c. Update git repository by making changes in assignment 01. **A single pdf/word file on git repository should contain contents of both 1st and 2nd assignment**

Notice

Do not use following case studies

1. Triangle problem
2. Next data problem
3. Commission problem

Software Testing

Checklist	Marks
Neatness	
Word document	
PDF document	
Git repository	
Team work	
Daily work (from 25 Nov-to 30 Nov)	
Neatness	