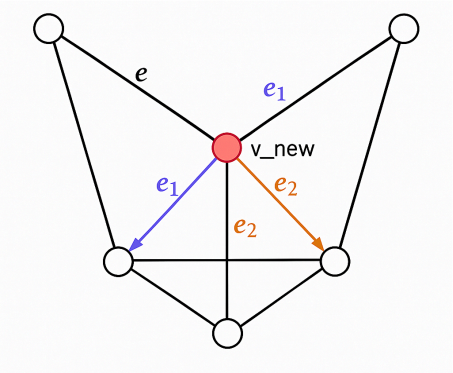
Paul Mallard & Pauline Dos Santos E4FI group 2

Question 2 : Given a **myMesh** M, and a **myHalfedge** e, give the pseudo-code to split e by adding the midpoint of e as a new vertex in M. You have to be careful that all the variables are updated properly.



```
myVertex* splitHalfedge(myMesh* M, myHalfedge* e){
   myHalfedge* e_twin = e->twin;
   myVertex* v1 = e->source;
   myVertex* v2 = e_twin->source;

   //midpoint
   Vector3 midpoint = (v1->position + v2->position) / 2.0f;

   //create vertex
   myVertex* v_new = M->addVertex(midpoint);

   //create Halfedges
   myHalfedge* e1 = M->addHalfedge();
   myHalfedge* e1_twin = M->addHalfedge();
   myHalfedge* e2 = M->addHalfedge();
   myHalfedge* e2_twin = M->addHalfedge();

   //sourcees to halfedges.
   e1->source = v1;
   e1_twin->source = v_new;
   e2->source = v_new;
   e2_twin->source = v2;

   //Update twins
   e1->twin = e1_twin;
   e1_twin->twin = e1;

   e2->twin = e2_twin;
   e2_twin->twin = e2;
```

```
  //Update nexts
    e1->next = e2;
    e2->next = e->next;

    e1_twin->next = e2_twin;
    e2_twin->next = e_twin->next;

    //Associate faces at halfedges
    e1->adjacent_face = e->adjacent_face;
    e2->adjacent_face = e->adjacent_face;
    e1_twin->adjacent_face = e_twin->adjacent_face;
    e2_twin->adjacent_face = e_twin->adjacent_face;

    v_new->Halfedge = e2;

    //delete to avoid double
    M.removeHalfedge(e);
    M.removeHalfedge(e_twin);

    return v_new;
}
```