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**BỘ GIÁO DỤC VÀ ĐÀO TẠO**

**TRƯỜNG ĐẠI HỌC SƯ PHẠM KỸ THUẬT TP. HỒ CHÍ MINH**

# KHOA CÔNG NGHỆ THÔNG TIN

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# KHOA CÔNG NGHỆ THÔNG TIN

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**BÁO CÁO ĐỒ ÁN**

**MÔN HỌC: QUẢN LÝ DỰ ÁN PHẦN MỀM**

**BÁO CÁO ĐỒ ÁN**

**MÔN HỌC: QUẢN LÝ DỰ ÁN PHẦN MỀM**

**Sinh viên thực hiện:**

Lê Văn Anh Đức 20110634

Hoàng Công Thành Nhân 20110687

Đoàn Võ Nhựt Hào 20110641

Đặng Hữu Giàu 20110636

**Giáo viên hướng dẫn:**ThsNguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

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**Giáo viên hướng dẫn:**ThsNguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

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**THÀNH PHỐ HỒ CHÍ MINH – 5/2023**

**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

**THÀNH PHỐ HỒ CHÍ MINH – 5/2023**

**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

**THÀNH PHỐ HỒ CHÍ MINH – 5/2023**

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**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

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AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAPz7+wDV1NMADg4MADc4OAAFBQUAAQEBAAEBAQAAAAAAAAAAAAEBAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAQEAAQEBAAAAAAAAAAAAAQEBAAAAAAACAgIAHR4eAGdqbQBSU1UA4uHiAPX19AAMDQ0AHh4fABMUFADr6ekAl5uaAMnIxwDy8fEAQ0ZGADAyMgAGBgYAAAAAAAEBAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEAAAEAAAAAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEBAQAAAAAAAwMDAAICAgABAQEAAQEBAAEBAQAAAAAAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAQEAAAAAAAICAgAAAAAAAAAAAAEBAQABAQEAAQEBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEAAAAAAAAAAAEBAAAAAAAAAAAAAAAAAAAAAAAODw8AQkVEANva2QCnpqUAxcTEAE1PUABKS0wAgIOFAOTi4gDo6OcA/fz9ABEUEwAiISIADA0NAP///wACAgIAAQEBAAAAAAAAAAAAAAAAAAAAAAACAgIAAQEBAAAAAAABAQEAAAAAAAAAAAAAAAAAAAAAAAABAAAAAAEAAf//AAICAgAhISIALi8vANHPzwDe3dwAIyQkAAUFBQABAQEAAP8AAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAJ+GYHkEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP//AAECAgANDQ4A+fn6AOnp6AAjJSUABAMEAAAAAAAAAAAAAQEBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQEBAAEBAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAEBAQABAQEA////AAIAAAAZGhsAGRobAP///wD//wAAAgIBAPj4+ADIx8cArayrAC0uLQA/QkEAQ0RGABUWFgACAgIAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAQEAAQEBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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A5OTjAMfGxgC4trQAAQECAG1wcAA2NzkANDQ1APPz8wDQz84AsrCuAKKfnwDV1NMAa21vACUnJgAEAwMAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP7+/gD///8AxMPCAJeVkwANDA4AaWxtADc5OQAJCQkAAQEBAP///wAODg0AQ0RFAAMCAwC7urkAjYuKACUmJQA5OjwANjc4ABobGgAMDA0ABAQEAAAAAAD4+PcA29vaAMC/vgD9/f4AAQD/APr5+gD29/YA9fX1APj5+QAiIyMAX2JkAElLSwAMDAwAAQEAAAAAAQAgICEAAAAAAAIBAgAA/wAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABWJqezAAAgAElEQVQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAsLCwAjJCQAAAAAAAEBAQD/CAgAJgwmAGRmZwD7+fsAt7e1APDu7wDPzc0A2dfYAAgJCQAEBAUA/v79ABQUFAAeHyAA+iz7AAYHBwABAAEA+vr6APDw7wDb2toAxMLCAMzLygDt7OwAJScnAE9QUQApKiwABAQEAAEBAQATExMAQkNEACssKwCwra4Ap6WkAJiVkwB2eXsAGhsbAAEBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP///wAAAAAA8/PzAKimpQD9/PwAYmVlADw9PgAGBgYAAAEAAAABAQAB//8ABwcIACYnKAAdHh8AODk6ALu6uQDPzs0ApaOhALa1tAAtLi0AKystACAhIQAODw8ABQUFAEpMTQAqLCwA3NvbAOjn5wDs6+sA5OPjAAD/AAAqKisAXWBgAEBBQwANDQ0A/wAAAAEBAAAA/wAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEBAQAAAAAAAAAAAAAAAAAAAQEAAQAAAAABAQAfHyEAbnFyABQVFAC2tbQA+fj4ABkaGwAYGBgAFBUVABwcHAAoKSkAGBkZAO/u7gDl5OQA7u3tANvc2wDT0tIA19XTAAEAAQAgISIAUFJTAD0+PgAYGRoABgYFAAEBAQAAAAAA//8AAAAAAAAXFxkAU1ZXAPHx8QCwr64AwsG/AFdYWgAAAgIAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAD///8AAQEBANnZ2ADX19YAPj4/ADk7PAAEBQQAAAEAAAEAAQD//wAAAAEAAAAAAAADAwIADAsLAC0vLwAkJiYA4uHhANTT0gDQz9AA0M7PAMLBwQAODQ8ADA0NAAoKCQAGBgYA/wAAAPj3+ADm5eUA5+blABobGwBZW1wARkhJACIjIwAICAgAAQEBAAAAAAAAAAAAAAEAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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CAgIA7u3sAK6srAC7ubgA2tnYAObn5wBgYWMACgkJAAMEBAAJCgkAAAAAAAEBAQAUFBUAISMjAN7d3QDn5uYALC0uAFJUVQD+/v4Aw8LAABYXFwACAgMA+fn4APv7+wALCwwAAgICAO7u7gDJx8YA7e3sAPj6+ADY2NgASUlLAEJERADAv74Avbu7APb19QAFBwcA+fj3AKGengDj4uIAYWRlAB8fIAADAwMAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP///gD//v4A3NvbAJuZlwDx8PAAOjw7AMLAwAARExMATk5QABESEgA4OTkAFxgZAPX19ACLiIcAGxwcAO7t7wCzsrEAEBERAO7u7QDNy8wA8/TzABoZGgA1NzcAWFlbAFpbXgATFBMA/v//ANva2QC/vbwAERISAC4wMAADAwQAAAAAAPz9/QD4+PgACAgJAAoKCgAmKCkAqKalAP//AABiZGUAREVHAA0NDQAAAAAAERESAE1PUADw8O8AnpuaACgpKQBJS0wAAgICAP///wD8+/sA7OzsAMfGxQClpKMA19XVALGvrwAdHh4AQ0RFAGxvcACGhIIAn5ybABYXFgA7PT0A8PDvAIWDgwCcmpgAcnR2ABUWFgAA/wAAAAEBAAIDAwAeHh8AYWNkAB8gIAChn50A1dPTAPDv7wDz8fIA5eTjANbV1AADAgMAAQMDAAUEBAADBAMAAQICAP78/QD8/PsA/f39ABESEwAaGxsA6OfnANXU1AAyMzUABwcHAP8AAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP8AAAAAAAAAAAAAAAEAAAAAAAAA/wAAAAAAAP8AAAAAAQAAAQAA////AP///wD+/v4A1dTTALe2tQAlJSUAOTo8ABYXFwACAgIA////APT08wDh4eEA2NbWANzc2gDp6OgA4+PjAEFBQgBbXV8AERISAP///wAAAAAAAAAAAP/+/wD9/v0A/f39APv7+wD4+PgA9vX0APb39wD6+fkA/Pz8AP7+/gABAQEABQYGAAkJCQAMDAwADQwNAAcIBwADAwQAAgICAAEBAQAA/wAAAQEAAAABAAAAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAARxA3UwAAIABJREFUAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA////AAAAAAD///8A/v79APv6+wD29/cA8/PzAPf19AD2+PgA/f39AAD/AAADAwMABQUFAAgICAAJCgoACwsLAAcGBgAEBQUAAwMDAAICAgAAAAAA////AAICAgD+/f4A3NvbAJSSkQD29vYAGRkZAB8fHwAmJycAJicoABcZGQAGBQUAAAAAAPr6+gDb2dgAw8PDAAMDAgBWAACA/39YWgAPDxAAAAD/AAABAQABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAD/AAAAAAAAAAAAAAABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP8AAAAAAAAAAAAAAP8A/wDs6+sA09LRAAsLCwAMDgwA09TSAM3NzAAEBAQABQUEAAEBAgD9/v4A/Pz8APz8+wD//v4A/Pz9APr6+AD7+/wAAAAAAAwMDABHSUsAXmBgACkqKwAEBAQAAQEBAAAAAAAAAAAA///+AM3LygCqp6YAGBkYAGhrbAAREREAurm3AKyrqQAyMjMAZ2lsAAABAQCzo6MAw8LBAAUGBgBHSksAV1hZACcoKAAKCgsAAwICAP8AAAD4+PgAvLq4ABwdHgBVWFkAMzQ1AAMDAwAAAAAAERERAFZYWADj4uEAu7q6AP///gAuLzAA5OTjAPv6+wD29vcAAAAAAAAAAAASExMANzc3AKWjowC/vb4AGRkbABMUEwBcXl8ASkxMAPv7+wC2tbQA09LRAPX09QAcHBwAOTo7AOHh4ADExMUAFRUXAPb39wAeHyAAWFtbAB4fIAAEBQUAGRkaAOHh4ACysLAAISAhAC4uMADAv74AEhITAGNlZgAODw8AAP8AAAAAAAAAAAAAAAEAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAP8AAAAAAAAAAAAAAAEAAP//AAD9/v4Aw8HAAN7e3QBFRkcA+/v7APDv7wB2eXoATE1PAAAAAAACAgIA/Pz8AA4ODwAFBAQALCwuAAYGBgC5uLYAf3t5AO/w8AASERIADRAPAMvJyQC3trUAV1paAFNUVgD6+voA5OPjAKyqqgDi4uIAVVdYAC0uLgAEBAQAAQEBAPf29gDt7e4AFxcXAAgJCQAcHR0AAQEBAAUGBQAVFxYACAgHAP///gAAAAEAAgICAAsLCwAdHR4AAgICAO/u7gABAQEABAQEAAAAAAAEBAQAGxwcAE5QUQAbHR0AnpqZAMbFxAC1tLM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**BỘ GIÁO DỤC VÀ ĐÀO TẠO**

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# KHOA CÔNG NGHỆ THÔNG TIN

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**BỘ GIÁO DỤC VÀ ĐÀO TẠO**

**TRƯỜNG ĐẠI HỌC SƯ PHẠM KỸ THUẬT TP. HỒ CHÍ MINH**

# KHOA CÔNG NGHỆ THÔNG TIN

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**BÁO CÁO ĐỒ ÁN**

**MÔN HỌC: QUẢN LÝ DỰ ÁN PHẦN MỀM**

**BÁO CÁO ĐỒ ÁN**

**MÔN HỌC: QUẢN LÝ DỰ ÁN PHẦN MỀM**

**Sinh viên thực hiện:**

Lê Văn Anh Đức 20110634

Hoàng Công Thành Nhân 20110687

Đoàn Võ Nhựt Hào 20110641

Đặng Hữu Giàu 20110636

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

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**Giáo viên hướng dẫn:** Nguyễn Trần Thi Văn

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

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**ĐỀ TÀI: XÂY DỰNG ỨNG DỤNG QUẢN LÝ CÔNG VIỆC**

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**THÀNH PHỐ HỒ CHÍ MINH – 5/2023**

**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

**THÀNH PHỐ HỒ CHÍ MINH – 5/2023**

**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

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**THÀNH PHỐ HỒ CHÍ MINH – 12/2020**

NHẬN XÉT CỦA GIÁO VIÊN HƯỚNG DẪN

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LỜI CÁM ƠN

Lời đầu tiên nhóm xin phép được gửi lời cảm ơn chân thành và sâu sắc nhất đến với Khoa Công Nghệ Thông Tin – Trường Đại Học Sư Phạm Kỹ Thuật Thành Phố Hồ Chí Minh đã tạo điều kiện cho nhóm chúng em được học tập, phát triển nền tảng kiến thức sâu sắc và thực hiện đề tài này.

Bên cạnh đó nhóm chúng em xin gửi đến thầy Nguyễn Trần Thi Văn lời cảm ơn sâu sắc nhất. Trải qua một quá trình dài học tập và thực hiện đề tài trong thời gian qua. Thầy đã tận tâm chỉ bảo nhiệt tình nhóm chúng em trong suốt quá trình từ lúc bắt đầu cũng như kết thúc đề tài này.

Nhờ có những nền tảng kiến thức chuyên ngành vững chắc cộng thêm với những kinh nhiệm và yêu cầu thực tế ngoài xã hội thông qua việc học ở trường và những chuyến đi thực tế thu thập ý kiến người dùng. Tập thể các thầy cô Khoa Công Nghệ Thông Tin và đặc biệt thầy Nguyễn Trần Thi Văn đã tặng cho chúng em một khối lượng kiến thức và kinh nghiệm khổng lồ về chuyên ngành và công việc trong tương lai. Đặc biệt điều này đã giúp và thôi thúc chúng em hoàn thành được đề tài. Chúng em thật sự cảm ơn và khắc ghi những kiến thức đó. Đây sẽ là hành trang vô cùng lớn của chúng em trước khi bước ra một cuộc sống mới.

Tuy nhiên lượng kiến thức là vô tận và với khả năng hạn hẹp chúng em đã rất cố gắng để hoàn thành một cách tốt nhất. Chính vì vậy việc xảy ra những thiếu sót là điều khó có thể tránh khỏi. Chúng em hi vọng nhận được sự góp ý tận tình của quý thầy(cô) qua đó chúng em có thể rút ra được bài học kinh nghiệm và hoàn thiện và cải thiện nâng cấp lại sản phẩm của mình một cách tốt đẹp nhất.

Cuối cùng một lần nữa chúng em xin gửi lời cảm ơn sâu sắc nhất đến với thầy Nguyễn Trần Thi Văn và tập thể quý thầy (cô) Khoa Công Nghệ Thông Tin – Trường Đại Học Sư Phạm Kỹ Thuật Thành Phố Hồ Chí Minh. Chúc các thầy cô có sức khỏe thật tốt.

Chúng em xin chân thành cảm ơn!

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# CHƯƠNG 1: PHÂN TÍCH YÊU CẦU DỰ ÁN

* 1. Bản thuyết minh đề tài

Dự án quản lý công việc là một ứng dụng web giúp người dùng quản lý và phân chia công việc, tạo các task/todo và gán cho chính mình hoặc thành viên trong nhóm mà mình quản lý.

Ứng dụng sẽ yêu cầu người dùng đăng nhập hoặc đăng ký tài khoản mới để sử dụng các tính năng của nó.

Người dùng có thể quản lý thông tin cá nhân của bản thân.

Người dùng có thể tạo nhóm và tham gia vào nhóm. Người quản lý nhóm có thể chấp nhận hoặc từ chối yêu cầu tham gia nhóm của người dùng. Người dùng có thể hủy yêu cầu tham gia nhóm trước khi được chấp nhận. Người dùng nhận được thông báo khi được chấp nhận vào nhóm.

Ứng dụng sẽ cho phép người dùng tạo task/todo cho mình hoặc cho nhóm, mỗi task/todo có thể được phân loại theo danh mục, nhãn, trạng thái và mức ưu tiên khác nhau. Người dùng có thể đặt ngày hoàn thành cho task/todo của mình và sẽ nhận được thông báo khi chỉ còn 1 giờ là hết hạn.

Nếu người dùng là quản trị viên của một nhóm, họ có thể tạo task/todo trong phạm vi nhóm và gán cho thành viên của nhóm. Người dùng được gán vào task/todo sẽ nhận được thông báo.

Ứng dụng sẽ có chức năng sắp xếp task/todo theo thang điểm được tính dựa trên các thuộc tính của task/todo đó.

Người dùng có thể thêm, xóa và chỉnh sửa task/todo của mình hoặc task/todo trong phạm vi nhóm. Nếu task/todo được tạo trong phạm vi nhóm, chỉ có quản trị viên của nhóm đó mới có quyền thêm, xóa hoặc chỉnh sửa task/todo đó.

Nếu task/todo thuộc phạm vi của một nhóm, người dùng có thể bình luận trên task/todo đó. Người dùng được gán vào task/todo sẽ nhận được thông báo khi có người bình luận trên task/todo của mình.

Ứng dụng cung cấp chức năng thống kê cho người dùng có cái nhìn tổng quan hơn về tiến trình công việc của bản thân cũng như nhóm mà mình quản lý. Từ đó sắp xếp và phân bổ lại công việc một cách hợp lý hơn.

* 1. Khảo sát hiện trạng
     1. Hiện trạng

Các ứng dụng quản lý công việc hiện nay đánh mạnh vào các tổ chức, đội nhóm lớn gây ra sự khó khăn trong việc sử dụng cho các cá nhân và đội nhóm nhỏ. Trong khi các ứng dụng đơn giản hơn lại thiếu đi các tính năng để hỗ trợ người dùng có thể giao tiếp với nhau. Kết hợp giữa hai sự thiếu sót trên, ta có được một ứng dụng phù hợp với người dùng cá nhân và các đội nhóm nhỏ, giúp người dùng tập trung hơn vào việc quản lý công việc và cung cấp cái nhìn trực quan hơn về công việc của mình.

Quản lý người dùng:

* Đăng nhập
* Đăng ký tài khoản
* Quản lý thông tin cá nhân
* Đăng xuất.
* Quản lý nhóm:
* Tạo nhóm
* Tham gia nhóm
* Chấp nhận/từ chối yêu cầu tham gia nhóm
* Gán task cho người dùng trong nhóm.

Quản lý công việc:

* Tạo công việc
* Phân loại công việc theo danh mục, label, status, độ ưu tiên,
* Gán công việc cho người dùng
* Chỉnh sửa công việc
* Xóa công việc
* Bình luận trên công việc
* Tự động sắp xếp công việc theo thang điểm.

Thống kê công việc:

* Thống kê tiến độ hoàn thành của công việc
* Tổng số công việc hoàn thành trong tháng
* Tổng số công việc chậm trễ.
* Tiến trình các công việc theo từng nhóm mà mình tham gia/quản lý

Thông báo:

* Tự động thông báo khi công việc chỉ còn 1 tiếng là hết hạn
* Thông báo khi có người bình luận trên công việc của mình
* Những hoạt động liên quan đến nhóm mà mình quản lý,...
  + 1. Yêu cầu

Lưu trữ: Các thông tin về

* Task: Tên công việc, mô tả công việc, trạng thái (Đang làm, Đã hoàn thành, Cần làm, Trì hoãn, Đã hủy), mức độ ưu tiên, thời gian cần để hoàn thành công việc, deadline, người sở hữu, nhóm sở hữu, danh mục, nhãn.
* Category: Tên danh mục, mức ưu tiên của danh mục, người sở hữu, nhóm sở hữu.
* Label: Tên nhãn, màu của nhãn, người sở hữu, nhóm sở hữu
* User: Tên tài khoản, họ tên người dùng, email, password, ngày tháng năm sinh
* Group: Tên nhóm, trưởng nhóm, danh sách thành viên
* Notification: Loại thông báo, trạng tháng (đã đọc hay chưa), người nhận, tin nhắn thông báo (message).
* Group Join Invitation: Người yêu cầu tham gia nhóm, nhóm yêu cầu tham gia, tình trạng yêu cầu (đã được chấp nhận, đã hủy, đã bị từ chối)
* Comment: Người bình luận, công việc được bình luận, thời gian bình luận, nội dung bình luận.

Tra cứu:

* Task: Theo Tên công việc, trạng thái, mức độ ưu tiên, deadline, người sở hữu, nhóm sở hữu, danh mục, nhãn
* Category: Theo Tên danh mục, tên nhóm
* Label: Theo Tên nhãn, theo tên nhóm
* User trong nhóm mình quản lý: Theo Tên tài khoản, theo họ và tên
* Group: Theo Tên nhóm, ngày tham gia, ngày tạo
* Notification: Theo loại thông báo, trạng thái, người nhận
* Group Join Invitation: Theo tình trạng yêu cầu, nhóm yêu cầu tham gia, theo ngày nhận yêu cầu
* Comment: Theo người bình luận, công việc được bình luận
* Tính toán:
* Sắp xếp các công việc theo đầu vào người dùng là “thời gian rảnh của người dùng”

Kết xuất:

* 1. Bản danh sách các yêu cầu của phần mềm
     1. Danh sách yêu cầu chức năng nghiệp vụ

 Bộ phận: Quản lý Task Mã số: QLT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Task liên quan đến cá nhân | Tra Cứu |  |  | Xem danh sách các Task liên quan đến cá nhân |
| 2 | Tìm Kiếm Task | Tra Cứu | Tìm kiếm theo các thông tin: Tên Task, Group, ngày hết hạn,… |  |  |
| 3 | Thêm Task | Lưu Trữ |  | QLT BM1 | Khi thêm Task mới, Người QL cập nhật Task mới vào danh sách Task |
| 4 | Xóa Task | Lưu Trữ | Các Task  không hợp quy định, tạo nhầm, không cần thiết,… |  |  |
| 5 | Cập nhật thông tin Task | Lưu Trữ |  |  | Cập nhật thông tin mới cho Task |
| 6 | Phân công Task | Lưu Trữ | Chỉ phân Task cho người  trong nhóm |  | Chỉ Group trưởng mới có quyền |
| 7 | Thông báo Công việc | Tra Cứu | Các công việc sắp hết hạn, công việc vừa được chỉnh sửa thông tin |  |  |

QLT\_BM1:

THÊM TASK MỚI

Tên Task: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Category:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Label:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Độ ưu tiên:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ngày hết hạn:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mô tả: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bộ phận: Quản lý Category Mã số: QLC

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Category | Tra Cứu |  |  | Xem danh sách các category |
| 2 | Thêm Category | Lưu Trữ |  | QLC BM1 |  |
| 3 | Xóa Category | Lưu Trữ |  |  |  |
| 4 | Cập nhật thông tin Category | Lưu Trữ |  |  | Cập nhật thông tin mới cho category |
| 5 | Tìm kiếm Category | Tra cứu | Tìm kiếm theo các thông tin: Tên User, ID,... |  |  |

QLC\_BM1:

THÊM CATEGORY MỚI

Tên Category: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Độ ưu tiên:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

● Bộ phận: Quản lý Label Mã số: QLL

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách label | Tra Cứu |  |  | Xem danh sách các label |
| 2 | Thêm label | Lưu Trữ |  | QLL\_BM1 |  |
| 3 | Xóa label | Lưu Trữ |  |  |  |
| 4 | Cập nhật thông tin label | Lưu Trữ |  |  | Cập nhật thông tin mới cho label |
| 5 | Tìm kiếm label | Tra Cứu | Tìm kiếm theo các thông tin: Tên Label, Màu sắc,... |  |  |

QLL\_BM1:

THÊM LABEL MỚI

Tên Label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Màu sắc:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Bộ phận: Quản lý User Mã số: QLU

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách User | Lưu Trữ |  |  | Hiển thị danh sách các User đang có |
| 2 | Thêm User | Lưu Trữ |  | QLU\_BM1 | Khi 1 User đăng ký thì thêm thông tin của User đó vào danh sách User |
| 3 | Xóa User | Lưu Trữ |  |  | Xóa 1 User khi User chọn xoá tài khoản của chính họ |
| 4 | Cập nhật thông tin User | Lưu trữ |  |  | Thay đổi thông tin User |
| 5 | Tìm kiếm User | Tra Cứu | Tìm kiếm theo các thông tin: Tên User, ID,... |  |  |

QLU\_BM1:

THÊM USER MỚI

Email: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Password:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Confirm Password: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Username:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Bộ phận: Quản lý Group Mã số: QLG

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Group | Lưu Trữ |  |  | Hiển thị danh sách các Group đang có |
| 2 | Thêm Group | Lưu Trữ |  |  | Khi thêm 1 Group thì thêm thông tin của Group đó vào danh sách Group |
| 3 | Xóa Group | Lưu Trữ |  |  | Xóa 1 Group khi Group trưởng chọn xóa Group của chính họ |
| 4 | Cập nhật thông tin Group | Lưu trữ |  |  | Thay đổi thông tin Group |
| 5 | Tìm kiếm Group | Tra Cứu | Tìm kiếm theo các thông tin: Tên Group,... |  |  |

* Bộ phận: Quản lý Notification Mã số: QLN

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Notification | Lưu Trữ |  |  | Hiển thị danh sách các Notification đang có |
| 2 | Thêm Notification | Lưu Trữ |  | QLN\_BM1 | Khi 1 Notification được thêm thì thông tin của Notification đó vào danh sách Notification |
| 3 | Xóa Notification | Lưu Trữ |  |  | Xóa 1 Notification khi User chọn xóa Notification của chính họ |
| 4 | Cập nhật thông tin Notification | Lưu trữ |  |  | Thay đổi thông tin Notification |
| 5 | Tìm kiếm Notification | Tra Cứu | Tìm kiếm theo các thông tin: người nhận, nội dung, trạng thái... |  |  |

QLN\_BM1:

THÊM NOTIFICATION MỚI

Loại Notification: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Trạng thái:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Người nhận: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Tin nhắn thông báo:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Bộ phận: Quản lý Group Join Invitation Mã số: QLI

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Group join Invitation | Lưu Trữ |  |  | Hiển thị danh sách các Group join Invitation đang có |
| 2 | Thêm Group join Invitation | Lưu Trữ |  | QLI\_BM1 | Khi 1 Group join Invitation được thêm thì thông tin của Group join Invitation đó vào danh sách Group join Invitation |
| 3 | Xóa Group join Invitation | Lưu Trữ |  |  | Xóa 1 Group join Invitation khi User chọn xóa Group join Invitation của chính họ |
| 4 | Cập nhật thông tin Group join Invitation | Lưu trữ |  |  | Thay đổi thông tin Group join Invitation |

QLI\_BM1:

THÊM GROUP JOIN INVITATION MỚI

User yêu cầu tham gia: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group yêu cầu tham gia:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trạng thái: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Bộ phận: Quản lý Comment Mã số: QLC

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| STT | Công Việc | Loại Công Việc | Quy Định/ Công Thức Liên Quan | Biểu Mẫu Liên Quan | Ghi Chú |
| 1 | Xem danh sách Comment | Lưu Trữ |  |  | Hiển thị danh sách các Comment đang có |
| 2 | Thêm Comment | Lưu Trữ |  |  | Khi 1 Comment được thêm thì thông tin của Comment đó vào Task |
| 3 | Xóa Comment | Lưu Trữ |  |  | Xóa 1 Comment khi User chọn xóa Comment của chính họ |
| 4 | Cập nhật thông tin Comment | Lưu trữ |  |  | Thay đổi thông tin Comment |

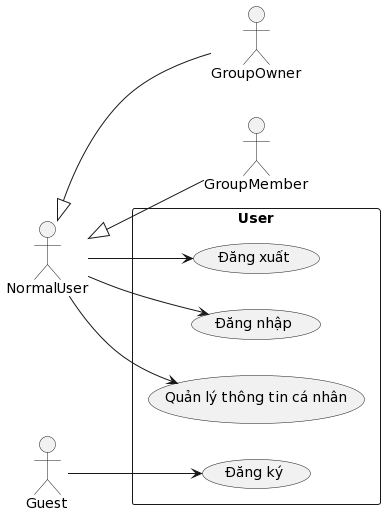
* + 1. Danh sách yêu cầu chức năng hệ thống

|  |  |  |  |
| --- | --- | --- | --- |
| STT | Nội dung | Mô tả chi tiết | Ghi chú |
| 1 | Xác thực người dùng | Người dùng đăng ký tài khoản và đăng nhập vào ứng dụng sử dụng email và password đã đăng ký.  Từ sau khi đăng nhập, người dùng sẽ được cấp một JWT token và gửi kèm nó về cũng request tới hệ thống, hệ thống sẽ nhờ token đó xác thực yêu cầu của người dùng và thực hiện hành động cũng như trả về kết quả cho người dùng đó. |  |
| 2 | Phân quyền chức năng | Sử dụng hệ thống phân quyền chức năng theo Role của người dùng (NORMAL USER, GROUP MEMBER và GROUP OWNER) tới từng loại tài nguyên khác nhau trong hệ thống như và phạm vi truy cập của tài nguyên đó (thuộc sở hữu cá nhân hay hội nhóm).  Role GROUP\_OWNER sẽ có đầy đủ quyền truy cập vào tất cả các tài nguyên thuộc nhóm mà họ quản lý, trong khi GROUP\_MEMBER chỉ có quyền truy cập đọc và cập nhật với một số tài nguyên trong các nhóm mà họ đã tham gia. Với các NORMAL USER (là tất cả các user) chỉ được phép truy cập và quản lý tài nguyên của cá nhân họ. |  |
| 3 | Cài đặt thông báo | Thông báo sẽ được chia ra thành nhiều loại thông báo khác nhau   * Thông báo từ các công việc cá nhân. * Thông báo liên quan đến hội nhóm. * Thông báo hệ thống. * Thống báo quản lý tài khoản.   Với mỗi loại thông báo, người dùng có quyền bật tắt chức năng thông báo để nhận hay ngừng nhận thông báo từ loại thông báo đó. |  |

* + 1. Danh sách yêu cầu phi chức năng

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| STT | Nội dung | Tiêu chuẩn | Mô tả chi tiết | Ghi chú |
| 1 | Tốc độ phản hồi của ứng dụng nhanh. |  | Người dùng sử dụng các phần cứng khác nhau sẽ không tạo ra sự khác biệt rõ rệt trong quá trình sử dụng ứng dụng. |  |
| 2 | Giao diện trực quan, đơn giản, dễ dùng |  | Không cần mất quá 5 phút để tìm hiểu và bắt đầu sử dụng 90% chức năng của ứng dụng. Giao diện dễ tìm và phù hợp cho mọi lứa tuổi, ngành nghề. |  |
| 3 | Luôn cập nhật dữ liệu mới nhất cho người dùng |  | Người dùng phải luôn có được dữ liệu mới nhất khi sử dụng ứng dụng, không bị bỏ lỡ bất cứ thông tin nào quan trọng khi sử dụng ứng dụng. |  |
| 4 | Cá nhân hóa |  | Người dùng tự do quản lý thông tin cá nhân cũng như cài đặt hệ thống sao cho phù hợp với nhu cầu sử dụng của bản thân. |  |

* 1. Lược đồ chức năng
* Actor:
* Nhân viên quản lý vé
* Nhân viên quản lý phòng chiếu
* Nhân viên quản lý lịch chiếu
* Nhân viên quản lý phim
* Nhân viên quản đốc
* Người quản trị
* Use case



Diagram

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated Diagram

Description automatically generated Diagram

Description automatically generated

# CHƯƠNG 2: TÔN CHỈ, PHẠM VI, CẤU TRÚC PHÂN CHIA CÔNG VIỆC DỰ ÁN

* 1. Tôn chỉ của dự án (Project Charter)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tôn chỉ Dự án (Project Charter)  Tên dự án (Project Title): Dự án Xây dựng ứng dụng Quản lý Công việc  Ngày bắt đầu (Project Start Date): 22/3/2023 Ngày kết thúc (Project Finish Date): 24/5/2023  Thông tin về kinh phí (Budget Information): Do không cần đầu tư cho thiết bị cũng như lực lượng nhân lực đã có sẵn, kinh phí cần dự án không nhiều.  Trưởng nhóm Dự án (Project Manager): Lê Văn Anh Đức, 20110634, levananhduc1804@gmail.com  Mục tiêu dự án (Project Objectives): Xây dựng và hoàn thiện ứng dụng Quản lý Công việc   * Bất kì ai cũng có thể sử dụng ứng dụng * Quản lí và tổ chức công việc một cách hiệu quả hơn * Tạo và gán các nhiệm vụ, lên lịch thời gian, phân loại công việc theo độ ưu tiên, tạo lịch trình cho các công việc, dự án * Đồng bộ hóa dữ liệu trên nhiều thiết bị, và cung cấp thông tin thống kê về tiến độ công việc. * Thiết kế giao diện thân thiện với người dùng   Cách tiếp cận (Approach):   * Tìm hiểu thông tin, khảo sát thị trường, xác định yêu cầu. * Tìm hiểu hoạt động của ứng dụng quản lý dự án - công việc hiện có trên thị trường. * Phân tích thông tin, đưa ra giải pháp, xác định yêu cầu đối với phần mềm * Xác định phạm vi dự án (scope statement), cấu trúc phân việc (work breakdown structure), thời gian thực hiện và thời gian hoàn thành dự án. * Phân tích, thiết kế hệ thống * Lập kế hoạch và phát triển hệ thống * Kiểm thử hệ thống * Quảng bá hệ thống với người dùng   Vai trò và Trách nhiệm (Roles and Responsibilities): | | | | |
| Vai trò | Họ Tên | MSSV | Tổ chức/Vị trí | Liên hệ |
| Project Manager + Developer + Designer | Lê Văn Anh Đức | 20110634 | Leader | 0339443\*\*\* |
| Developer + Maintainer | Hoàng Công Thành Nhân | 20110687 | Member | 0768131\*\*\* |
| Developer + Maintainer | Đoàn Võ Nhựt Hào | 20110641 | Member | 0335983\*\*\* |
| Maintainer + Designer | Đặng Hữu Giàu | 20110636 | Member | 0917585\*\*\* |
| Ký tên (Sign-off):  Lê Văn Anh Đức  Hoàng Công Thành Nhân  Đoàn Võ Nhựt Hào  Đặng Hữu Giàu | | | | |

* 1. Phạm vi của dự án (Scope Statement)

|  |
| --- |
| Tên dự án - (Project Title): Dự án Xây dựng ứng dụng Quản lý Công việc  Ngày – (Date): 22/3/2023 Người viết (Prepared by): Lê Văn Anh Đức |
| Lý giải về dự án (Project Justification):   * Mục tiêu: xây dựng và hoàn thiện ứng dụng Quản lý Công việc * Đối tượng phục vụ: Bất kì ai cũng có thể sử dụng ứng dụng * Phạm vi: bao gồm các công việc cần thực hiện, thời gian và tài nguyên có sẵn. * Lợi ích: tăng hiệu suất cá nhân bằng cách tối ưu hóa quản lý thời gian và ưu tiên công việc quan trọng hơn. * Rủi ro: không hoàn thiện dự án dẫn đến lãng phí nhân lực * Đánh giá hiệu quả: (bổ sung khi kết thúc dự án) |
| Các tính chất và yêu cầu của sản phẩm (Product Characteristics and Requirements):   1. Các tính chất của sản phẩm:  * Tính dễ sử dụng: ứng dụng nên có giao diện đơn giản, trực quan và dễ sử dụng. * Tính linh hoạt: ứng dụng quản lí công việc nên có khả năng tùy chỉnh và phù hợp với các nhu cầu và phong cách làm việc của từng người dùng hoặc tổ chức. * Tính an toàn và bảo mật: ứng dụng nên đảm bảo tính an toàn và bảo mật của dữ liệu của người dùng. * Tính khả năng tích hợp: ứng dụng nên có khả năng tích hợp với các ứng dụng khác như email, lịch làm việc, chat, hoặc các ứng dụng quản lí dự án khác * Tính thân thiện với người dùng: ứng dụng nên có tính chất thân thiện với người dung  1. Các yêu cầu của sản phẩm:  * Khả năng quản lí dự án và công việc * Khả năng lập lịch và cài đặt hạn chế thời gian * Khả năng quản lí tài liệu * Khả năng ghi chú và đánh dấu * Khả năng theo dõi tiến độ * Khả năng tương tác và thông báo |
| Tổng kết về các sản phẩm chuyển giao dự án.   * Website thực hiện các chức năng chính * Thiết bị (máy in, thiết bị thanh toán)   Các kết quả liên quan đến quản lý dự án (Project management-related deliverables):   * Lên kế hoạch * Danh sách nhiệm vụ * Lên lịch trình nhiệm vụ * Báo cáo tiến độ * Hướng dẫn người dùng sử dụng * Tài liệu tham khảo * Mẫu Phản hồi   Sản phẩm liên quan (Product-related deliverables):   * Tài liệu thiết kế * Mã nguồn phần mềm * Phần cứng |
| Các yêu cầu để đánh giá sự thành công của dự án (Project Success Criteria):   1. Hoàn thành dự án trong thời gian dự kiến. 2. Đầy đủ các chức năng dự kiến của ứng dụng. 3. Đáp ứng yêu cầu đề ra. 4. Đáp ứng đầy đủ chức năng. 5. Đáp ứng tốt trải nghiệm người dùng. 6. Người dùng phải được hướng dẫn sơ bộ cách sử dụng và hoạt động của ứng dụng |

* 1. Cấu trúc phân chia công việc của dự án (WBS)

|  |
| --- |
| WBS cho Dự án  Ngày: 22/03/2023  Người viết: Lê Văn Anh Đức   1. Quản lí dự án    1. Khảo sát thực trạng và yêu cầu người dùng    2. Viết project charter    3. Viết project scope    4. Lập WBS cho dự án 2. Phân tích, thiết kế    1. Xác định chức năng, người dùng vẽ lược đồ và đặc tả usecase    2. Vẽ lược đồ tuần tự cho các chức năng    3. Thiết kế và đặc tả CSDL    4. Thiết kế giao diện (wireframes, mockup)    5. Vẽ lược đồ lớp 3. Cài đặt    1. Code các chức năng đăng nhập đăng ký    2. Code xử lý các chức năng về quản lý project       1. Xây dựng chức năng tạo project       2. Xây dựng chức năng mời thành viên       3. Xây dựng chức năng chỉnh sửa project    3. Xây dựng chức năng giao nhiệm vụ    4. Xây dựng chức năng thảo luận    5. Xây dựng chức năng đánh giá thành viên 4. Kiểm thử    1. Kiểm thử phần giao diện    2. Kiểm thử phần chức năng 5. Triển khai    1. Chọn nhà cung cấp dịch vụ miễn phí    2. Deploy sản phẩm    3. Kiểm tra hoạt động của sản phẩm có bình thường hay không 6. Hoàn thiện các tài liệu liên quan    1. Hoàn thiện tài liệu quản lý dự án    2. Hoàn thiện cáo cáo về sản phẩm    3. Hoàn thành slide thuyết trình    4. Báo cáo |

# CHƯƠNG 3: CÁC CÔNG VIỆC VÀ THỜI GIAN DỰ KIẾN HOÀN THÀNH

* 1. Thứ tự công việc thực hiện và thời gian ước lượng cho mỗi công việc

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| STT | Công việc | Mô tả | Công việc trước | Thời gian dự kiến (ngày) |
| 1 | A | Khảo sát yêu cầu thực tế của người dùng về việc quản lí công việc | - | 2 |
| 2 | B | Viết project charter, project scopte và lập WBS của dự án | - | 2 |
| 3 | C | Xác định chức năng, người dùng | A, B | 3 |
| 4 | D | Vẽ lược đồ usecase, lược đồ tuần tự | C | 7 |
| 5 | E | Thiết kế và đặc tả CSDL | D | 5 |
| 6 | F | Vẽ lược đồ lớp cho các chức năng | E | 5 |
| 7 | G | Thiết kế giao diện | C | 7 |
| 8 | H | Code xử lý chức năng của người dùng | F, G | 15 |
| 9 | I | Code xử lý chức năng của Admin | F, G | 15 |
| 10 | J | Tích hợp các phần đã xây dựng thành hệ thống hoàn chỉnh | H, I | 10 |
| 11 | K | Kiểm thử phần giao diện và chức năng | J | 7 |
| 12 | L | Sửa các lỗi phát hiện trong quá trình kiểm tra | K | 7 |
| 13 | M | Hoàn thành các tài liệu liên quan | L | 5 |