9

TO‘QQIZINCHI AMALIY MASHG‘ULOT

Korxona ilovalarini dasturlash · 2 soat · 9-mavzu

Hisobotlar: qoldiq, savdo, debitorlik

Jamoa loyihasi bosqichi · 5 ta PHP topshiriq · o‘qituvchi bahosi

Agregatsiya | GROUP BY | Materialized view | PDF | Dashboard

MASHG‘ULOT MAQSADI

Amaliy mashg‘ulot oxirida siz quyidagilarni bajara olasiz...

1. **Yaratish** — `ReportService`: ombor qoldiqlari, davr bo‘yicha savdo, debitorlik qarzi va uning muddati
2. **Qo‘llash** — SQL agregatlar, `FILTER`, `date_trunc` va Eloquent `withSum`/`withCount` ni
3. **Eksport qilish** — hisobotlarni Excel (ko‘p varaq) va PDF (DejaVu Sans) ko‘rinishida
4. **Chizish** — dashboard: KPI kartochkalari va 12 oylik savdo diagrammasi (Chart.js)
5. **Tezlashtirish** — oylik savdo uchun materiallashtirilgan ko‘rinish va uni yangilash buyrug‘ini

Qanday bajariladi va qanday baholanadi?

Ish tartibi

1. Saytga login va parolingiz bilan kiring: **emro.uz/korxona/kirish.html**
2. **9-amaliy** sahifasini oching (oxirgi slayddagi QR kod).
3. Yo‘riqnoma bo‘yicha jamoa loyihasida bosqichni bajaring, **commit** va **push** qiling.
4. PHP topshiriqlarni yeching: ▶ **Sinab ko‘rish** → ✓ **Topshirish** (yashirin testlar).
5. Loyiha havolasini (GitHub repo, PR yoki tag) topshiring — o‘qituvchi **baho** qo‘yadi.

Baholash mezonlari

- **Natija** — loyiha bosqichi mezonlar ro‘yxati bo‘yicha bajarilgan.
- **Topshiriqlar** — PHP topshiriqlar testlardan o‘tgan.
- **Kod sifati** — tushunarli nomlar, PSR-12, kichik va mazmunli commitlar.
- **Jamoaviy hissa** — har bir a’zo o‘z qismini tushuntira oladi.
- **Muddat** — muddatdan keyin topshirilgan ish “kechikkan” deb belgilanadi.

01

1-qadam. ReportService va hisobot ekranlari

Uchta hisobot · filtrlar uchun Form Request · ruxsatlar · indekslar

ReportService

Filtr

Ruxsat

DEBITORLIK

receivables(): qarz va muddat guruhlari

```php
public function receivables(CarbonImmutable $asOf): Collection
{
    $d = $asOf->toDateString();
    $sum = 'SUM(i.total - i.paid_amount)';
    $f = fn (string $cond) =>
        "$sum FILTER (WHERE ?::date - i.due_at::date $cond)";
    return DB::table('invoices as i')
        ->join('counterparties as c', 'c.id', '=', 'i.counterparty_id')
        ->whereIn('i.status', ['unpaid', 'partial'])
        ->select('c.id', 'c.name', 'c.inn')
        ->selectRaw("$sum AS total_debt")
        ->selectRaw($f('<= 0') . ' AS not_due', [$d])
        ->selectRaw($f('BETWEEN 1 AND 30') . ' AS d1_30', [$d])
        ->selectRaw($f('> 30') . ' AS d30_plus', [$d])
        ->groupBy('c.id', 'c.name', 'c.inn')
        ->orderByDesc('total_debt')
        ->get();
}
```

▶ NATIJA

```
 name                | inn       | total_debt | not_due    | d1_30
| d30_plus
 “Baraka Savdo” MChJ | 305123456 | 64800000   | 40000000   |
24800000   |
 “Sharq Ulgurji” MChJ| 301111222 | 12320000   |            |
| 12320000
```

`$f = fn (string $cond)`

kun guruhi shartini yasovchi yordamchi; ichida faqat kod konstantalari

`?::date - i.due_at::date`

PostgreSQL da sana ayirmasi — kunlar soni

`[$d] binding`

sana faqat bog‘langan qiymat sifatida

NULL kataklar

Blade da `?? 0` yoki SQL da `COALESCE`

SPETSIFIKATSIYA

Uchta hisobot: ustunlar va filtrlar

Hisobot	Ustunlar	Filtrlar	Rollar
Qoldiqlar	ombor, SKU, nomi, quantity, reserved, mavjud, qiymati, kam?	ombor, faqat kam qoldiq	omborchi, menejer
Savdo	davr, hujjatlar soni, sof savdo, QQS, jami	from, to, group (kun/hafta/oy)	menejer, buxgalter
Top mahsulotlar	SKU, nomi, miqdor, summa, o‘rin	from, to, limit	menejer
Debitorlik	mijoz, STIR, qarz, joriy, 1–30, 31+ kun	sana (asOf)	buxgalter

Har bir jadval ostida “Jami” qatori va “Ma’lumotlar ... holatiga” yozuvi bo‘lsin.

MARSHRUTLAR

Hisobot marshrutlari va ruxsatlar

```php
Route::middleware('auth')->prefix('reports')->name('reports.')
    ->controller(ReportController::class)->group(function () {
        Route::get('stock', 'stock')->name('stock')
            ->middleware('can:reports.stock');
        Route::get('sales', 'sales')->name('sales')
            ->middleware('can:reports.sales');
        Route::get('receivables', 'receivables')->name('receivables')
            ->middleware('can:reports.receivables');
        Route::get('{report}.{format}', 'export')->name('export')
            ->whereIn('format', ['xlsx', 'pdf']);
    });
```

▶ NATIJA

```
GET /reports/sales?from=2026-10-01&to=2026-10-27&group=day → 200
GET /reports/receivables (omborchi) → 403
GET /reports/sales.xlsx?from=... → savdo-2026-10-01_2026-10-27.xlsx
```

can:reports.sales

spatie ruxsati Gate orqali tekshiriladi

controller(ReportController::class)

guruhdagi marshrutlar metod nomi bilan yoziladi

{report}.{format}

bitta `export` metodi — xlsx yoki pdf

whereIn('format', ...)

marshrut parametri cheklovi — boshqa format 404

02

2-qadam. Excel va PDF eksport

Koʻp varaqli Excel · ustun formatlari · dompdf shablonlari · fayl nomlari

Excel | dompdf | Format

EXCEL VARAQ

Debitorlik varag‘i

```php
class ReceivablesSheet implements FromCollection, WithHeadings,
    WithTitle, ShouldAutoSize
{
    public function __construct(private CarbonImmutable $asOf) {}
    public function collection()
    {
        return app(ReportService::class)->receivables($this->asOf)
            ->map(fn ($r) => [$r->name, $r->inn, (float) $r->total_debt,
                (float) $r->not_due, (float) $r->d1_30,
                (float) $r->d30_plus]);
    }
    public function headings(): array
    {
        return ['Mijoz', 'STIR', 'Qarz', 'Joriy', '1–30', '30+'];
    }
    public function title(): string { return 'Debitorlik'; }
}
```

▶ NATIJA

```
[Debitorlik]
Mijoz                | STIR      | Qarz           | Joriy          |
1–30 kun       | 30+ kun
“Baraka Savdo” MChJ | 305123456 | 64 800 000,00 | 40 000 000,00 |
24 800 000,00 | 0,00
```

(float) Excel uchun

Excel o‘zi son sifatida saqlaydi; hisoblash emas, faqat yozish

WithColumnFormatting

qo‘shing: `columnFormats()` → `['C:F' => '#,##0.00']` — Excel mintaqasiga qarab ko‘rinadi

WithTitle

varaq nomi

ShouldAutoSize

ustun kengligi avtomatik

TEKSHIRUV

Eksport sifatini tekshirish

1

Raqamlar mosligi

ekran, Excel va PDF dagi “Jami” bir xil

2

Harflar

PDF da `o‘`, `g‘`, `’` to‘g‘ri; CSV/Excel da ham

3

Formatlar

Excel da pul — son (qo‘shib bo‘ladi), sana — sana

4

Ruxsat

omborchi `/reports/receivables.pdf` ni ocha olmaydi (403)

5

Hajm

5 000 qatorli PDF vaqti o‘lchandi va README ga yozildi

03

3-qadam. Dashboard va materiallashtirilgan ko‘rinish

KPI kartochkalari · 12 oylik diagramma · bo‘sh oylarni to‘ldirish · mv_sales_monthly

Dashboard

Chart.js

mv_sales_monthly

SERVIS

Diagramma ma’lumoti: bo‘sh oylarni to‘ldirish

```php
public function monthlyChart(CarbonImmutable $to, int $n = 12): array
{
    $from = $to->startOfMonth()->subMonths($n - 1);
    $sums = SalesMonthly::query()
        ->where('month', '>=', $from->toDateString())
        ->where('month', '<=', $to->toDateString())
        ->selectRaw("to_char(month, 'YYYY-MM') AS ym")
        ->selectRaw('SUM(total) AS total')
        ->groupBy('ym')
        ->pluck('total', 'ym');        // ['2026-10' => '1692320000.00']
    $labels = $data = [];
    for ($m = $from; $m <= $to; $m = $m->addMonth()) {
        $key = $m->format('Y-m');
        $labels[] = $key;
        $data[] = round(((float) ($sums[$key] ?? 0)) / 1e6, 1);
    }
    return ['labels' => $labels, 'data' => $data];
}
```

▶ NATIJA

```
['labels' => ['2025-11', '2025-12', ..., '2026-10'],
 'data'   => [1104.2, 0, 1210.4, ..., 1692.3]]   // dekabr — savdo yo‘q
```

`subMonths($n - 1)`

joriy oy bilan birga 12 ta oy

`pluck('total', 'ym')`

`oy => summa` lug‘ati

`?? 0`

savdosi yo‘q oy — 0, diagrammada bo‘shliq emas

`/ 1e6, round(..., 1)`

faqat ko‘rsatish uchun — mln so‘m, bir xona

BLADE

KPI kartochkalari

```
<div class="grid grid-cols-4 gap-4" wire:poll.60s>
    <x-kpi-card title="Oktabr savdosi" :value="$kpi['sales']"
        unit="so‘m" :delta="$kpi['sales_delta']" />
    <x-kpi-card title="Debitorlik" :value="$kpi['receivable']"
        unit="so‘m" :href="route('reports.receivables')" />
    <x-kpi-card title="Muddati o‘tgan" :value="$kpi['overdue']"
        unit="so‘m" />
    <x-kpi-card title="Kam qoldiq" :value="$kpi['low_stock']" unit="ta"
        :href="route('reports.stock', ['low' => 1])" />
</div>
<p class="text-sm">
    Ma’lumotlar {{ $refreshedAt->format('d.m.Y H:i') }} holatiga
</p>
```

▶ NATIJA

```
[Oktabr savdosi: 1 692 320 000 so‘m  ▲ 16,3 %]  [Debitorlik: 77 120 000 so‘m]
[Muddati o‘tgan: 37 120 000 so‘m]  [Kam qoldiq: 6 ta mahsulot]
Ma’lumotlar 27.10.2026 03:00 holatiga
```

`x-kpi-card`

qayta ishlatiladigan Blade komponenti; sonni o‘zi `number_format` bilan formatlaydi

`wire:poll.60s`

Livewire komponenti har 60 soniyada qayta render

`:delta`

o‘tgan oyga nisbatan o‘zgarish — `LAG` yoki servisda hisoblanadi

LOYIHA BOSQICHI

Natija va topshirish

Natija: `ReportService` asosidagi uchta hisobot (ombor qoldiqlari, davr bo‘yicha savdo, debitorlik va uning muddati), ularning Excel va PDF eksporti, KPI kartochkalari va 12 oylik savdo diagrammasi bilan dashboard, `mv_sales_monthly` materiallashtirilgan ko‘rinishi.

Baholash mezonlari

✓ `ReportService` da `stockBalances`, `salesByPeriod`, `receivables` metodlari; har biri bazada agregatsiya qiladi (PHP siklida yig‘ish yo‘q).

✓ Ko‘rsatkich ta’riflari `docs/reports.md` da yozilgan; ekran, Excel va PDF dagi jami qiymatlar bir xil.

✓ Filtrlar (`from`, `to`, `group`, `warehouse_id`) Form Request bilan tekshiriladi; SQL ga foydalanuvchi qiymati faqat binding orqali tushadi.

✓ Hisobotlar rollar bo‘yicha himoyalangan (`can:` middleware), menyuda faqat ruxsat etilganlari ko‘rinadi.

✓ Excel eksport ko‘p varaqli, pul ustunlari son formatida; PDF DejaVu Sans bilan, o‘zbek harflari to‘g‘ri.

✓ Dashboard: 4 ta KPI kartochkasi va bo‘sh oylari to‘ldirilgan 12 oylik diagramma.

✓ `mv_sales_monthly` migratsiyasi UNIQUE indeks bilan, `reports:refresh` buyrug‘i `CONCURRENTLY` bilan ishlaydi.

✓ Hisobot ustunlari uchun indekslar migratsiyasi va 12 oylik seed ma’lumotlari mavjud.

⮉ `feature/reports` Pull Request havolasini yuboring. PR tavsifida: uchta hisobot va dashboard skrinshotlari, bitta Excel va bitta PDF namunasi (fayl sifatida biriktirilgan) hamda `reports:refresh` ishlashini ko‘rsatuvchi terminal chiqishi bo‘lsin.

Telefon kamerasi bilan skanerlang

Loyiha havolasini amaliy sahifasidagi «Loyiha bosqichi» bo‘limida topshiring.

AMALIY TOPSHIRIQ

Kompyuterda mustaqil · Oson · 10 ball

4-topshiriq: Ombor qoldiqlari hisoboti

`stocks` qatorlari berilgan: `['warehouse' => 'TSH-1', 'sku' => ..., 'quantity' => int, 'reserved' => int, 'min_stock' => int, 'price' => int]` (narx so‘mda). Har bir qator uchun mavjud qoldiq (`quantity − reserved`), qiymat (`quantity × price`) va kam qoldiq belgisi (`mavjud < min_stock`) ni hisoblang; qatorlarni ombor, so‘ng SKU bo‘yicha saralang. Invariant buzilgan bo‘lsa (`quantity < 0`, `reserved < 0` yoki `reserved > quantity`) — `DomainException`.

Imzo: `function qoldiq_hisobot(array $stocks): array`

Qaytaradi: `['rows' => [['warehouse' => ..., 'sku' => ..., 'available' => int, 'value' => int, 'low' => bool], ...], 'total_value' => int, 'low_count' => int]`.

MISOL · CHAQIRUV

```
qoldiq_hisobot([['warehouse' => 'TSH-1', 'sku' => 'UN-001', 'quantity' => 35, 'reserved' => 20, 'min_stock' => 20, 'price' => 385000], ['warehouse' => 'TSH-1', 'sku' => 'SH-010', 'quantity' => 420, 'reserved' => 100, 'min_stock' => 50, 'price' => 14500]])
```

MISOL · NATIJA

```
{"rows":[{"warehouse":"TSH-1","sku":"SH-010","available":320,"value":6090000,"low":false},{"warehouse":"TSH-1","sku":"UN-001","available":15,"value":13475000,"low":true}],"total_value":19565000,"low_count":1}
```

Telefon kamerasi bilan skanerlang

1. Saytga kiring (login va parol)
2. PHP kodni yozing va sinab ko‘ring
3. ✓ Topshirish — natija o‘qituvchiga

AMALIY TOPSHIRIQ

Kompyuterda mustaqil · O‘rta · 20 ball

5-topshiriq: Davr bo‘yicha savdo (kun / hafta / oy)

Hisob-fakturalar `['issued_at' => 'YYYY-MM-DD', 'total' => int]`. `$from` va `$to` (`YYYY-MM-DD`, ikkalasi ham kiradi) oralig‘idagi hujjatlarni `$group` bo‘yicha guruhlang: `day` — `YYYY-MM-DD`, `month` — `YYYY-MM`, `week` — ISO hafta `YYYY-Www` (masalan, `2026-W44`; yil sifatida ISO yil olinadi: 2027-01-01 → `2026-W53`). Noma’lum `$group` yoki `$from > $to` — `InvalidArgumentException`. Natija — davr kaliti bo‘yicha o‘sish tartibida saralangan `davr => summa` lug‘ati.

Imzo: `function davr_savdo(array $invoices, string $from, string $to, string $group): array`

Qaytaradi: `['davr' => int, ...]`; mos hujjat bo‘lmasa `[]`.

MISOL · CHAQIRUV

```
davr_savdo([['issued_at' => '2026-10-26', 'total' => 100],
['issued_at' => '2026-10-27', 'total' => 50], ['issued_at' =>
'2026-11-02', 'total' => 70]], '2026-10-01', '2026-10-31',
'day')
```

MISOL · NATIJA

```
{"2026-10-26":100,"2026-10-27":50}
```

Telefon kamerasi bilan skanerlang

1. Saytga kiring (login va parol)
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3. ✓ Topshirish — natija o‘qituvchiga

AMALIY TOPSHIRIQ

Kompyuterda mustaqil · O‘rta · 20 ball

6-topshiriq: Debitorlik qarzining muddati (aging)

Hisob-fakturalar `['due_at' => 'YYYY-MM-DD', 'total' => int, 'paid_amount' => int]` va hisobot sanasi `$sana` berilgan. Qarz = `total − paid_amount`; qarzi 0 bo‘lganlar hisobga olinmaydi. Kechikish kunlari = `$sana − due_at`. Guruhlar: `joriy` (kechikish ≤ 0), `1-30`, `31-60`, `61-90`, `90+`. `paid_amount < 0` yoki `paid_amount > total` — `DomainException`; sana `YYYY-MM-DD` ko‘rinishidagi mavjud sana bo‘lmasa — `InvalidArgumentException`.

Imzo: `function debitorlik_yoshi(array $invoices, string $sana): array`

Qaytaradi: `['joriy' => int, '1-30' => int, '31-60' => int, '61-90' => int, '90+' => int, 'jami' => int]` — barcha kalitlar har doim, shu tartibda.

MISOL · CHAQIRUV

```
debitorlik_yoshi([['due_at' => '2026-11-10', 'total' => 1000, 'paid_amount' => 0], ['due_at' => '2026-10-01', 'total' => 500, 'paid_amount' => 200], ['due_at' => '2026-07-01', 'total' => 300, 'paid_amount' => 300]], '2026-10-27')
```

MISOL · NATIJA

```
{"joriy":1000,"1-30":300,"31-60":0,"61-90":0,"90+":0,"jami":1300}
```

Telefon kamerasi bilan skanerlang

1. Saytga kiring (login va parol)
2. PHP kodni yozing va sinab ko‘ring
3. ✓ Topshirish — natija o‘qituvchiga

AMALIY TOPSHIRIQ

Kompyuterda mustaqil · Qiyin · 30 ball

7-topshiriq: Ombor × mahsulot pivot jadvali

Qoldiqlar `['warehouse' => 'TSH-1', 'sku' => 'UN-001', 'available' => int]` ro‘yxatidan Excel dagi kabi pivot jadval yasang: qatorlar — SKU (o‘sish tartibida), ustunlar — omborlar (o‘sish tartibida) va oxirida `jami`; yo‘q juftlik uchun 0. Pastki `jami` qatori har bir ombor va umumiy yig‘indini beradi. Bitta (ombor, SKU) juftligi ikki marta kelsa — `DomainException` (`stocks` da `unique(warehouse_id, product_id)` invarianti).

Imzo: `function pivot_qoldiq(array $rows): array`

Qaytaradi: `['columns' => [ombor, ...], 'rows' => [sku => [ombor => int, ..., 'jami' => int], ...], 'jami' => [ombor => int, ..., 'jami' => int]]`.

MISOL · CHAQIRUV

```
pivot_qoldiq([['warehouse' => 'TSH-2', 'sku' => 'UN-001',
'available' => 5], ['warehouse' => 'TSH-1', 'sku' => 'UN-001',
'available' => 15], ['warehouse' => 'TSH-1', 'sku' => 'SH-010',
'available' => 320]])
```

MISOL · NATIJA

```
{"columns":["TSH-1","TSH-2"],"rows":{"SH-010":{"TSH-1":320,"TSH-
2":0,"jami":320},"UN-001":{"TSH-1":15,"TSH-
2":5,"jami":20}},"jami":{"TSH-1":335,"TSH-2":5,"jami":340}}
```

Telefon kamerasi bilan skanerlang

1. Saytga kiring (login va parol)
2. PHP kodni yozing va sinab ko‘ring
3. ✓ Topshirish — natija o‘qituvchiga

AMALIY TOPSHIRIQ

Kompyuterda mustaqil · Qiyin · 30 ball

8-topshiriq: Diagramma uchun oylik qator

SQL natijasida savdosi yo‘q oylar bo‘lmaydi, diagrammada esa ular `0` bo‘lishi kerak. `$oylik` — `['YYYY-MM' => int]` (so‘m), `$from` va `$to` — `YYYY-MM` (ikkalasi ham kiradi). Shu oraliqdagi barcha oylar uchun `labels`, `data` (yo‘q oy — 0, oraliqdan tashqaridagi kalitlar e’tiborsiz) va oldingi oyga nisbatan o‘zgarish `change` ni qaytaring: birinchi oy uchun `null`, oldingi oy 0 bo‘lsa `null`, aks holda `round((joriy - oldingi) * 100 / oldingi, 1)`. Format noto‘g‘ri (oy 01–12 emas) yoki `$from > $to` — `InvalidArgumentException`; oraliq 36 oydan uzun — `DomainException`.

Imzo: `function diagramma_malumoti(array $oylik, string $from, string $to): array`

Qaytaradi: `['labels' => [string, ...], 'data' => [int, ...], 'change' => [?float, ...]]` — uchala ro‘yxat bir xil uzunlikda.

MISOL · CHAQIRUV

```
diagramma_malumoti(['2026-08' => 1200, '2026-10' => 1500, '2026-09' => 1500], '2026-07', '2026-10')
```

MISOL · NATIJA

```
{"labels":["2026-07","2026-08","2026-09","2026-10"],"data":[0,1200,1500,1500],"change":[null,null,25,0]}
```

Telefon kamerasi bilan skanerlang

1. Saytga kiring (login va parol)
2. PHP kodni yozing va sinab ko‘ring
3. ✓ Topshirish — natija o‘qituvchiga

TOPSHIRIQLAR VA TOPSHIRISH

9-amaliy: 8 ta PHP topshiriq

1 **KPI kartochkalari**
Oson · 10 ball · ma’ruzada

2 **Oylar bo‘yicha savdo va yig‘ma summa**
O‘rta · 20 ball · ma’ruzada

3 **Summani hisobot formatida yozish**
Oson · 10 ball · ma’ruzada

4 **Ombor qoldiqlari hisoboti**
Oson · 10 ball

5 **Davr bo‘yicha savdo (kun / hafta / oy)**
O‘rta · 20 ball

6 **Debitorlik qarzining muddati (aging)**
O‘rta · 20 ball

7 **Ombor × mahsulot pivot jadvali**
Qiyin · 30 ball

8 **Diagramma uchun oylik qator**
Qiyin · 30 ball

Telefon kamerasi bilan skanerlang

PHP kod saytda yoziladi va server tomonidan avtomatik tekshiriladi.

Loyiha havolasini ham shu sahifada topshirasiz; o‘qituvchi baho qo‘yadi.